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An Address
ON
CHILDREN IN GENERAL PRACTICE:
A STUDY BOTH OF TEMPERAMENT AND OF DISEASE.

Being the Lloyd Roberts Memorial Lecture delivered at St. Mary's Hospital, Manchester.

BY HECTOR CHARLES CAMERON,
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I AM told on all hands, by all who are concerned with the struggle to control him, parents and pedagogues, priests and physicians, that since the war the nervous child, so called, has become increasingly common. We know him well—pale and thin, wasting his meagre little body by the intense energy which he throws into the whole business of living, subject at times to fits of strange irritability or to uncontrollable outbursts of temper, a bad sleeper, a great refuser of food, never still for a moment, often squinting, stammering or incontinent of urine, prone to attacks of vomiting heralded perhaps by yawning, prostration, lassitude, foul-smelling breath, furring of the tongue, and a persistent irregularity of temperature which arouses fears of some latent tuberculous infection. At his best he shows a certain fragility of aspect which is a constant source of anxiety to his parents; at his worst, in response to the various stresses of his little life, to undue excitement, to some unusual exertion, or to some trivial and passing infection, the deterioration in his physical powers, in his mental achievements, and in his moral control may afford real and reasonable cause for alarm.

The study of such a child may be approached from many points of view. We may regard him as presenting in the main a problem in management. How sensitive he is to the influence of his surroundings at home or at school! Or we may concentrate attention upon the body rather than upon the mind, upon those defects of posture and of muscular coördination and control which are in a sense the outward and visible signs of nervous irritability and fatigue. Or, again, we may view him from the standpoint of the biochemist and stress the ætiological importance of that peculiar and characteristic instability of metabolism which he inherits from a stock, intellectually gifted perhaps, but often nervously unstable and prone to suffer from a variety of disorders such as gout, eczema, asthma, or migraine, all of which are expressions of some inborn tendency to errors of metabolism. Mind, body, and the metabolic processes of the body—let us glance at each in turn.

MIND AND MANAGEMENT.

We may perhaps define the nervous child as the child who is most sensitive to the influences of the grown-up persons who are in charge of him and who care for him. What is said of him, thought of him, feared for him, that he tends to become. In good hands, when his parents are sensible, self-confident, and care-free persons, who take delight in his achievements and are in no way unduly perturbed by infantile delinquencies or trivial disturbances of conduct or of health, his progress may be more rapid than is the rule. Upon this element of suggestibility and of sensitiveness to the personal influence of others the whole of education reposes, and the type of child whom we are considering is capable of very rapid movement in either direction forwards or backwards. But to any mistake of management he responds with a maximal disturbance. All children, and nervous children more than most, at some time or other may sleep badly, or refuse food, or wet the bed, or be obsessed by some particular fear; but those troubles are transitory and trivial or grow to the proportions of formidable misfortunes according as they are cut short, because they are dealt with lightly and with optimism, or are perpetuated, because they are kept in the forefront of the child's consciousness by the too obvious concern and apprehension of the parents.

Again, a great deal of infantile misconduct is clearly designed by the child or forced upon the child by his desire to produce the maximal emotional response in his mother. No one can be successful in the management of little children who has not acquired the art of hiding from them their power to disturb. Those of us who have crying children, for example, are generally persons who are immeasurably distressed by the cry. A fixed determination to oppose and to make strain in the opposite direction is characteristic of many dominating, egotistical, nervous children. This negativistic attitude in the child is fostered by a common fault of management, a management which while powerless to control, yet never ceases from attempts to control. On the one side is ranged the child's strong, irritable, and restless determination to oppose; on the other, is arrayed a pitiful armament of never-ending reproofs, expostulations, appeals, threats, and trivial unheeded punishments.

Punishment no doubt can be made effective, but in general it is true that it is precisely the parents who suffer in this way, the parents whose distress and preoccupation with the trouble have been the cause of the whole difficulty, who are least able to administer punishment sufficiently severe to bring the child to silent acquiescence. Punishment which leaves the child still dominating the position by his cry, still established in his determination not to yield, is worse than useless because it aggravates and does not control the situation.

This spirit of negativism, this restless resistance against all traction that is exercised in too obvious and in too peremptory a way, is apt to find expression in all the activities of a little child's life. It is a main cause of refusal of sleep, of refusal of food, and of refusal to get the bowels open, and of all the ills that follow therefrom.

Thus that veritable anorexia nervosa, which so often afflicts the only child of well-to-do parents, finds much of its explanation in this negativism. Coaxed, urged, entreated, forced to eat, day in and day out, the mere sight or sound of the preparation of food may provoke a paroxysm of resistance. Yet such a child will often descend from his chair, in which the struggle has been waged, and astonish his parents by scavenging greedily for crumbs upon the floor. A small boy, who resolutely and successfully refused all food at meal times, was described to me as being kept alive by a propensity from which the united efforts of his mother and nurse could not break him, for devouring the crusts from a paper bag, armed with which he was sent to feed the ducks in the park. His tearful mother had even got into the way of inserting some nutritious pieces of brown bread and butter into the parcel in the sure hope of their consumption by the child. In such a case an alteration in the management may achieve the happiest results. The mother must hide from the child her ardent desire that he should eat. Food must be doled out with apparent reluctance. The child must be made to feel that the one thing on which his parents feels strongly is that he must not have too much. It is not a question of deceiving the child. The trouble has originated in, and been kept up by, the too obvious disappointment and too insistent entreaty of the mother. She must correct and it may be, for the time being, over-correct her own attitude in order to restore the sensitive child's position to the normal.

ENURESIS.

Let us for a moment examine the genesis and significance of another common symptom of the hypersensitive and nervous child—enuresis. I see no reason why we should not recognise this common incontinence of urine, by night or sometimes by day,

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as hysterical. From one point of view it is, of course, true to say that all children or most children are physiologically hysterical if by that we mean no more than that the most normal child is prone to fall under the influence of any suggestion which is persistently made to it by the grown-up people upon whom it relies for support and protection. In about 6 per cent. of my cases of enuresis the suggestion has spread in the anxious mind of the child from the urethral to the rectal sphincter and incontinence of fæces has been added to incontinence of urine. In such cases the condition, although purely functional, resembles very closely the incontinence of fæces which results from some transverse lesion of the spinal cord. The sphincter ani is palpably toneless and the anus patulous. Nor does the child feel the finger inserted in rectal examination. We have here, undoubtedly, I think, an hysterical paresis of sphincter and an hysterical anæsthesia of the rectum. I think it possible that a similar hysterical paresis and anæsthesia exists at the neck of the bladder.

In general, it is clear that the child with enuresis is a hypersensitive child to whom his infirmity is absolutely abhorrent. It may hang like a cloud over his whole life. He is incontinent not because he does not care, but because he cares too much. Doubtless backward children and children of low mentality generally are difficult to train to habits of cleanliness, but their failure in this respect is then in keeping with and does not contrast with the general level of their intelligence and achievement. In enuresis the general level of the child is often high. His æsthetic sense is, as it were, too highly developed. The accident distresses him unduly. He cannot drive it from his thoughts. He fears and dismally anticipates its recurrence. No doubt many children compensate by assuming an attitude of ostentatious unconcern, which may deceive those who do not know the child or who have little understanding of children. No doubt, too, there are times and seasons when the child forgets his trouble. Just so in dyspareunia in early married life, existence is not always or wholly overclouded and some genuine happiness may be found in the ordinary activities of life. Yet the thought of the trouble is always in the background, only to be entertained to become overmastering. And far back in the infancy of this sensitive, suggestible child, paling, flushing, perhaps, too, stammering, who shows himself, however careless and insensitive to all appearance in this one respect, in all other respects easily upset by reproof, unable to stand up against criticism, and greatly upset by any situation in which he finds himself conspicuous or ridiculous, or in which he feels he has done the wrong thing, far back in his infancy, I say, is the shocked, grieved face of the mother or nurse uttering words of reproof or expressing disgust at his infantile defilement. With the majority of children such methods are commonly successful. But with the child so predisposed, the management that lays too great stress upon the occasional accident and too little upon the growing control, leads directly to the development of the disorder which we call enuresis and which may persist, greatly to the detriment of the child's whole life and development, until the growth of personality and self-confidence ultimately brings freedom from the grip of childish fears and obsessions.

It is a disorder very difficult to treat, but perhaps less difficult to prevent. Among the children of the well-to-do threats and punishments are not commonly resorted to. Yet the boy is well aware of the anxiety of his parents and their preoccupation with his trouble. The mother of the boy with enuresis is almost always profoundly agitated and profoundly pessimistic. Everything has been tried, nothing avails. To effect a cure we must succeed in ousting this pessimism from the home and substituting for it an all-embracing optimism. The child will readily grasp at any hope of cure. I have seen one boy cured by a vegetarian diet, another by denying him all vegetables. Within the boy's mind the hope of cure is often strong, the mother too often is most hopeless. Yet it is to the mother that he turns for relief from overmastering oppression.

I have chosen refusal of food and enuresis as examples in different types of child, the one often dominating and egotistical, the other often introspective and lacking in self-confidence of the reaction to specific faults of management.

The Metabolism of the Nervous Child.

Of the biochemistry of emotional states we know very little. Nevertheless, I am so impressed with its importance that I propose briefly to examine our present knowledge especially with regard to the metabolism of fat in the nervous child. It is characteristic of many of these children that they tend, as it were, to live upon a curve or in a cycle, with an inveterate tendency to fall suddenly, and often without ascertainable cause, from a state of good health and well-being to a state of indefinite illness in which complaints of prostration and fatigue, pallor, indefinite transitory pains in all situations, persistent irregularity of temperature, yawning, sweet smelling breath, irritability of temper, vomiting, and loss of weight are more or less constant. We hear much from the parents of these bouts, or turns, or attacks. In many of them, but by no means in all, gastro-intestinal symptoms dominate the picture, sometimes attacks of mucous diarrhœa, more often insistent distressing vomiting. In the worst and most typical cases we encounter the classical picture of the so-called periodic or cyclical vomiting. A considerable experience of this type of child has seemed to me to indicate the essential identity of all these attacks, whether mild or severe, whether always culminating in violent vomiting or whether vomiting is occasional or even absent.

The energy expended upon emotional activity and upon muscular activity is alike derived from the stores of carbohydrate in our bodies. The carbohydrate is, as it were, the petrol of choice. But we have little reserve of carbohydrate stored in our bodies. An adult man may possibly have some 8 ounces in the form of glycogen, distributed equally between the liver and the muscles. The carbohydrate reserves are replenished by every meal with its carbohydrate content, they are diminished in the interval between meals and especially in the long interval of the night, and they are quickly depleted by exertion, by great emotional excitement, and by starvation, whether by abstinence from food or as a result of vomiting, as well as by pyrexial states generally. In the absence of sufficient carbohydrate the individual is forced to fall back upon a different petrol and to consume the body fat which is the main storehouse of energy. Now the metabolism of fat is only successfully completed in the presence of and with the help of a sufficient amount of carbohydrate. If the body is short of carbohydrate, the fats are not completely metabolised to water and oxygen and there then circulate in the blood certain products of the incomplete combustion of fats, the so-called ketone bodies, especially acetone and diacetic acid, which are excreted for the most part in the breath but which also, in severe cases, appear in large amounts in the urine.

It is characteristic of the type of child whom we are now considering that all the ordinary stresses of his life, emotional excitement—a new school, for example, or a change of master—undue exertion, as from a long day's sight-seeing or a train journey, starvation, even the physiological starvation of the night, or a mild and trivial infection, produce with unusual readiness this state of ketonæmia and a disturbance of the acid-base-balance. The nervous child has in general a high basal metabolism. The fires of his being burn very brightly. His need for carbohydrate is probably high. At the same time there is some evidence that his powers of metabolising fat are relatively low. On a diet rich in fat and with little sugar and starch, with much cream, milk, butter, and eggs, his troubles grow apace.

During the recurrent bouts of illness the consumption of body fat as shown by the great loss of weight is often distressingly great. It is probable that the failure to utilise fats successfully and without the production of symptoms is dependent upon the depletion of the carbohydrate reserves or upon an inability to mobilise such carbohydrate as is available. Ketonæmia, a corresponding diminution in the alkaline reserve of the blood, and a slight and transient fall in the percentage of sugar in the blood are constant findings in the more severe cases. The point which seems to me to be of importance is to realise that while all children, just because they are children, are prone to develop ketonæmia, the nervous child has this tendency in an especial degree.

The nervous child has in this sense an unstable metabolism, and it is equally true that when the metabolic disturbance has arisen the nervous symptoms from which he tends to suffer always become aggravated. Thus during these bouts of ketonæmia we commonly find exacerbations of such symptoms as night terrors, enuresis, masturbation, or stammering. In night terrors the confused struggling of the frightened child, with pale face and wide open eyes, oblivious for long of the reassuring presence of the mother, recalls the similar state produced by very light chloroform anæsthesia, also a ketonæmia. Night terrors are, I think, very frequently best controlled by the free administration of glucose at bedtime. Similarly the profound torpid sleep of many children with enuresis may be symptomatic of ketonæmia. But almost all nervous symptoms are at their height during the exhaustion, irritability, and state of anxiety or apprehension which is characteristic of the bout or attack. We may perhaps compare the unhappy condition of these children with the similar state of nervous unrest and anxiety which follows directly upon the hypoglycæmia produced by an overdose of insulin, and which is then controlled, almost as it were by magic, by the provision of a few lumps of sugar.

The Physical Aspect of the Nervous Child.

In pronounced states of ketonæmia we encounter certain alterations in the physical state and aspect of the child. To those who are familiar with the distressing condition which we call cyclical vomiting the appearance of a child so affected is characteristic. We are struck at once by the pallor of the face, contrasting with the red and dry lips, by the great muscular relaxation, and by the utter prostration. Sometimes there is great restlessness and excitement, sometimes profound somnolence, almost coma. The pulse is rapid, the blood pressure is low. Especially the differential pulse is high. The respiration is often ample and deep, yawning is frequent, and the breath apt to be charged with acetone. The bowels are usually constipated, although sometimes there is diarrhœa with much mucus in the discharges. The tongue is furred, often there is painful ulceration of mouth or lips. The temperature curve is usually irregularly raised, although characteristically the skin may be moist and cool and there may be no other signs of fever. Thus it usually happens that the height of the pyrexia is, as it were, a surprise, accidentally revealed by the thermometer. Thirst may be great, but food is usually resolutely refused. Headache, giddiness, and nausea are common complaints. The vomiting may be so severe and persistent as to be by far the most prominent symptom, or it may be slight and occasional, sometimes even altogether absent.

The most constant and striking feature of such an attack is, I think, the extreme muscular relaxation which accompanies it and is caused by it. In a bad case the abdominal muscles are as toneless as in deep chloroform narcosis. Not long ago it happened that I was called with a surgical friend to see a little boy, who had long been subject to cyclical vomiting, and who, some days before, had had an operation for removal of tonsils and adenoids. As is not unusual in such cases the combination of the anæsthetic, the emotional disturbance produced by removal from home, and the relative starvation consequent upon the operation, had provoked a severe attack of ketonæmia. During recovery from the bout of vomiting he developed an intussusception. So toneless were the muscles of the abdominal wall that the surgeon had no difficulty at all in reducing the intussusception by manipulation through the abdominal parietes without laparotomy. The ketonæmia of chloroform could have produced no greater relaxation.

The tonelessness of the skeletal muscles and of the vasomotor muscles, perhaps, too, of the intestinal muscles, seems to me the most characteristic symptom of those recurrent metabolic crises which we know as "periodic" or cyclical vomiting. Although this amyotonia is greatly increased by and during an attack, it persists in great measure in the interval between the attacks. It gives to many of these nervous, eager, and excitable children a characteristic aspect and a characteristic posture which sometimes enables us to recognise them at a glance as subject to attacks or bouts of prostration with or without vomiting, such as I have described. Indeed, the symptoms of the exacerbation, though they are then of greater severity, are the same symptoms which are characteristic of the child between the attacks—amyotomia, pallor, proneness to fatigue, foul-smelling breath, yawning, persistent slight elevation of temperature, irregular action of the heart, and a failure to lay on any body fat.

Thus if we examine critically the body of one of these nervous children we cannot fail to observe that its general lines express exhaustion and fatigue. The posture is the reverse of the alert and well-braced stance inculcated on the drill ground. Under drill the soldier virtues are developed—resistance to fatigue, presence of mind, quickness to obey, precision of movement, and so forth. The lax and toneless stance of the nervous child is in keeping with his conspicuous deficiency in all those valuable qualities. His body is apt to be balanced, rather than held erect by muscular tone. Hence the curves of the spine are all exaggerated. A too great lordosis carries the shoulders far backwards and the abdomen into unpleasing prominence. A secondary compensatory curve in the cervical region becomes necessary in order to bring the eyes into line. The weight of the dependent arms pulls the shoulders forward and everts the scapular border. The somewhat flattened thorax is too soft and too compressible. Often it shows a significant depression of the lower end of the sternum, so that its outline on cross-section is kidney-shaped. The arch of the foot yields when the body-weight is put on it, while knees and elbows are capable of considerable hyperextension.

The pale face, with livid lines under the rather full underlid, from vasomotor paresis, adds to the woe-begone aspect. Although the child's interest in life, and his restless determination to oppose, may never seem to flag, and although every attempt to induce him to rest may be resented, yet his general aspect clearly indicates a state of fatigue.

Two further points only, of some clinical interest, need be mentioned. I cannot but be struck with the number of children, with symptoms such as these, who show some elevation or at least some instability of the temperature curve for weeks and even months at a time. The circumstance that this disturbance of fat metabolism is of itself sufficient to produce some degree of pyrexia in certain children does undoubtedly greatly add to our responsibilities and perplexities. It affords grounds very often for suspicions of latent glandular tuberculosis, or, because of the easily fatigued heart and the frequent presence of functional heart murmurs, of acute rheumatism with cardiac involvement. In my experience in a very large number of cases, this pyrexia, due not to infection but to some disturbance of metabolism, is at once controlled when sodium bicarbonate in doses of 100 to 200 g. daily is given. I have seen many cases in which this raised temperature, which had persisted

for months and given rise to alarming suspicions, has fallen straightway to the normal within 24 hours of the intake of sufficient alkali. But in the second place the matter is even more complicated by the frequency with which such a child does fall a prey to infection. Not only does the condition often develop as a result of some specific underlying infection, but it carries with it some lowering of the defences of the body against infection. It is clear that even in adults in states of great exhaustion from physical and emotional expenditure, immunity tends to fall. Cold-catching children seem to me to be divided into two groups: (1) those with visible and persistent infection of the lymphatic tissue in the nasopharynx, and (2) those pale and restless little creatures in whom the local reaction in the nasopharynx is often most trivial, but who respond to every trifling infection by a most unmistakable exacerbation of the metabolic disturbance to which they are prone. The metabolic component and the infective component of the whole are so intermingled as to make it often difficult to distinguish which is primary and which secondary.

The mind, the body, and the metabolic processes of the body, we cannot separate their study. Each merges into the other. One is tempted to add also the infective states of the body. In practice among children it is not the diversity of kinds of infection, so much as the diversity of the response of different children to the same infection, that makes the subject of such difficulty and of such interest. If a whole household falls a victim to some influenza or infective catarrh, while his brothers and sisters may respond by moderate and short lived pyrexia, clear evidence of local catarrhal reactions and a rapid convalescence, the child of the type we are now considering may appear to have been but very slightly infected, but there follows a prolonged deterioration of the general health such as I have described.

TREATMENT.

In the management of these difficult little people, wise, understanding, and considerate control is of supreme importance. Nor can we doubt the immense value of physical exercises, drill, dancing, and gymnastics. From the more medical point of view treatment may well concern itself with the attempt to control the tendency to the accompanying or underlying metabolic disturbance. In practice among the well-to-do we constantly find that the diet of these children contains a very large amount of fat. There is much propaganda in favour of fat. No doubt, as a whole, the children of the poor are fed upon a diet too largely carbohydrate. The number of calories of carbohydrate to be purchased for a penny is very much greater than the number of calories of fat. Under such circumstances the routine addition of milk to the diet may have the happiest results. But in the case of these particular children the boot is often on the other foot, and larger quantities of milk, butter, cream, and eggs are being given than can be metabolised successfully. Especially when the child has lost weight and has grown tired and thin in convalescence from a bout of acidosis, the parental agitation is apt to show itself in a heavy addition to the diet of cream, top milk, and cod-liver oil. Yet it is just at these times that the child is least able to deal with even moderate amounts of fat. At his best, when in free play in the open, when his body is whipped into a glow by exposure to sun and air, there may be no difficulty in dealing with the fat. When confined to the house, when convalescent from illness, when of necessity covered by impervious clothing, a diet rich in fat may well provoke or prolong the disturbance. And yet it is not the fat itself that has the deleterious effect. We must think in terms of the ratio of fat to carbohydrate in the diet, of the so-called ketogenic-antiketogenic ratio. For these children much carbohydrate is necessary to metabolise comparatively little fat. A free provision of carbohydrate is as necessary as a moderate limitation of the fat.

Formerly, I have no doubt wine was a very frequent and in some ways a valuable prescription. A bottle of port a day was adjudged necessary to combat the condition in the childhood of the younger Pitt. No doubt by means of alcohol, available carbohydrate is provided for the blood more rapidly than by any other means. I generally prescribe glucose in powder, about 2 ounces in the day between meals. The glucose appears to be absorbed quickly from the stomach, does not cause intestinal fermentation or diarrhœa, and seldom produces urticaria papulata. It is a most efficient means, given in these doses, of combating the tendency to ketonæmia which always seems present in these children. Disappointing results will, of course, be obtained in those cases in which the disturbance of metabolism is secondary to and symptomatic of some persistent and underlying infection — tuberculous glands, for example, or infected tonsils. Thus, in a child with ketonæmia and infected tonsils both components of the illness must be dealt with. The shock, the interference with the intake of food, and the anæsthetic of themselves tend to cause exacerbation of ketonæmia, and will sometimes make it appear as if the state of the child after an operation was much worse than before. Of the cold-catching children not helped by tonsillectomy, many belong to this group. Even when tonsillectomy is ultimately beneficial and much needed, there may be at first a great exacerbation of the symptoms of metabolic disturbance.

Glucose may even sometimes be a valuable help in the treatment of specific nervous disorders, masturbation, enureses, exhaustion, dyspepsia, or night terrors which seem to me often to accompany and to be increased by the underlying disturbance of the acid-base balance.

All are agreed on the advantages which sometimes follow the prescription of a small daily dose of alkali. Its power to control the common symptom of slight continued pyrexia I have already mentioned. The hypoglycæmia, the ketonæmia, and the diminution in the alkaline reserve, which would appear to be comparatively constant biochemical findings in these children, can sometimes be successfully combated by these simple measures, with consequent improvement in the mental and physical state of the child.

CARDIAC INFARCTION AND CORONARY THROMBOSIS.

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WHEN a man of advancing years is seized while at rest with severe pain across the sternum which continues for hours and which is accompanied by shock, collapse, and dyspnœa, he has an anginal attack of no ordinary kind. It is only reasonable to suppose that something definite and material has happened in the heart, and investigation is actually proving that such attacks are the result of an acute infarction of the heart muscle from coronary occlusion.

Coronary thrombosis is a complication of arterial disease which is comparable with cerebral thrombosis, both pathologically and in its clinical manifestations. Until recent years it was regarded as a terminal complication of angina pectoris, an event of pathological interest in relation to sudden death. But now a clinical syndrome has been assembled so that to-day in most cases the diagnosis can easily be made during life. The clinical recognition of coronary thrombosis

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is proving of great practical importance. In some cases the event may closely simulate acute abdominal conditions such as perforated ulcer, so that some have been surgically explored. In others an early diagnosis and prompt confinement to bed may mean the difference between life and death. Almost always the distinction from ordinary angina will modify the treatment and influence the prognosis. As many subjects of coronary thrombosis may recover from the attack as succumb to it, so that in future its diagnosis and course must take an important place in clinical medicine.

We happen to have had special opportunities in a general and special hospital, and in practice, of seeing many patients with these attacks and of watching their progress with special regard to the prognosis and the changes in the electrocardiogram which is often affected in a characteristic way. The present paper is based on the clinical study of 100 patients who had experienced one or more prolonged severe attacks of anginal pain, and in whom no diagnosis other than myocardial infarction seemed possible. Doubtful cases and those of post-mortem interest only have been excluded. We have made a supplementary study from the records of the Pathological Institute of the London Hospital from 1922 to 1926 for comparison; in these records clinical details were usually available. Altogether we have post-mortem records of 83 cases.

Historical.

The literature of the latter half of the nineteenth century contains numerous accounts of cases of fatal angina pectoris where coronary thrombosis was found post mortem, yet it was not until 1910 that any real attempt was made to establish cardiac infarction as a clinical entity. This is surprising in view of the fact that coronary thrombosis was correctly diagnosed during life by Hammer [9] as early as 1878.

The pathological aspect received more attention, and a full description of acute and chronic infarction of the heart was given by Ziegler [31] in his treatise on Pathology; he first used the term "myomalacia cordis" in 1879, affirming its ischæmic origin which had been disputed. In 1884 Leyden [15] published his important paper on the effects of coronary artery disease, in which he gave an accurate pathological and clinical account of coronary thrombosis. A most comprehensive pathological study is to be found in R. Marie's Paris thesis [20] of 1896, which deals with acute necrosis, scarred infarcts, aneurysm, and rupture of the heart; he recognised the frequency of coronary thrombosis and was familiar with its symptomatology. Huchard,[11] in his treatise on angina pectoris, described in the minutest detail the clinical syndrome of cardiac infarction, recognising the "état de mal angineux" and the epigastric site of the pain ("type pseudo-gastralgique"); though his abstract of 185 post-mortem records of angina contains many cases of cardiac infarction, old or recent, and in no less than 31 instances coronary thrombosis is specified, yet he does not suggest the possibility of its clinical distinction from ordinary angina.

In 1905 Kernig [12] first drew attention to the clinical association of pericarditis with anginal pain, described later by Sternberg [27] under the name of "pericarditis epistenocardica." The next important contribution to the subject was that of Obratzow and Strachesko [22] in 1910, describing three cases, confirmed by necropsies, in two of which the diagnosis had been made during life. They appear to have been the first to establish coronary thrombosis as a clinical entity distinct from angina pectoris. Herrick,[10] in 1912, further emphasised this distinction and drew attention to the fact that coronary thrombosis was not always immediately fatal. Since then an extensive and valuable American literature has appeared, and we may mention papers by Wearn,[28] Christian,[3] Fulton,[5] Le Count,[13] Levine,[14] Smith,[26] Acker,[1] Wolff and White,[30] and an excellent review by Hamman [8] among many. Starting with the experimental work of Smith on coronary artery ligation in animals, the effect of coronary thrombosis on the electrocardiogram has been studied, and Pardee [23] first recognised a curve characteristic of the acute stage of myocardial infarction in man. The anatomical studies of Gross on the coronary circulation enlarged our knowledge of the pathology of coronary obstruction. Allbutt [2] discussed coronary thrombosis chiefly as it affected and opposed his view of the aortic origin of angina pectoris. Mackenzie,[19] though not making the clinical distinction from angina, describes typical examples. In this country papers dealing directly with the subject have been published by A. G. Gibson,[7] McNee,[21] and Coombs and Hadfield,[4] and in France by Gallavardin,[6] Lian,[16] and Lutembacher.[18]

Pathology.

In the vast majority of cases the pathological basis of cardiac infarction is atheroma of the coronary arteries. Final occlusion is usually due to thrombosis at the site of constriction or ulceration of the vessel. In 70 per cent. of recent infarcts due to atheroma, thrombosis was visible to the naked eye. In the remaining 30 per cent. no thrombosis was seen, but microscopical examination was not made so that it was impossible to exclude a minute thrombosis as the final factor in an occlusion which had as its primary and essential factor atheroma.

Occasionally cardiac infarction is due to closure of the mouths of the coronary arteries by syphilitic aortitis, with or without thrombosis in addition. Less than 10 per cent. of all cardiac infarcts are due to syphilis in this way, though there are cases in which syphilitic aortitis is present, but where infarction is due to coronary atheroma and thrombosis. Coronary embolism is the rarest cause of gross cardiac infarction, and is then most often a complication of infective endocarditis.

We give below statistics from an analysis of necropsies in 83 cases of cardiac infarction or of mortal coronary thrombosis, 72 of which are from the post-mortem records of the London Hospital during the five years 1922-26.

Recent Infarction (51 Cases).—In 14 of these there was old infarction in addition. The basis of infarction was as follows:—

	Cases.
Coronary atheroma complicated by thrombosis	29
Coronary atheroma without macroscopical thrombosis	11
Syphilitic occlusion of coronary orifices complicated by thrombosis	2
Syphilitic occlusion of coronary orifices without thrombosis	5
Coronary embolism	4

Mortal Coronary Occlusion without Visible Infarction.

Coronary atheroma complicated by thrombosis	7

Old Infarction (25 Cases).

Coronary atheroma complicated by thrombosis	9
Coronary atheroma without macroscopical thrombosis	15
Syphilitic occlusion of coronary orifices	1

Site of Thrombosis.—Including four cases of multiple thrombosis, the left coronary or a branch was involved in 37 instances and the right in 18. In the left coronary the site of thrombosis was as follows:—

	Cases.
Anterior descending branch	24
Circumflex branch	10
Main vessel	3

The site of election for coronary thrombosis was the left anterior descending branch in the first 3 cm. of its course. In eight cases of syphilitic occlusion both coronary orifices were affected in five instances and the right orifice alone in three, twice with thrombosis.

Size and Distribution of the Infarct.—The area infarcted may be no larger than a penny or may include almost the whole of one ventricle. The site of an infarct depends upon the area of muscle supplied by the occluded artery, which may vary considerably in different hearts. The following is the usual distribution. Occlusion of the left anterior descending branch may involve the apex, anterior wall of the left ventricle, anterior part of the interventricular septum, and possibly an adjacent strip of the right ventricle.

Occlusion of the circumflex branch may involve the lateral and posterior walls of the left ventricle, usually including the papillary muscles of the mitral valve. Occlusion of the right coronary may involve the posterior part of the interventricular septum and the posterior walls of both ventricles. Sometimes the right coronary supplies most of the posterior wall of the left ventricle. The infarcted area will generally be less extensive than the total area supplied by the occluded artery.

The infarction is always more extensive on the endocardial aspect than on the pericardial, and often does not involve the subpericardial muscle at all. The earliest evidence of infarction is slight swelling and pallor of the myocardium. Later, at the stage more usually seen, it appears as a sharply demarcated yellow or grey area surrounded by a red injected border, and occasionally there is extensive hæmorrhage into the neighbouring muscle. Sometimes the infarct is diffusely mottled with areas of hæmorrhage, or it may be completely hæmorrhagic (" apoplectic type "). Old infarction is seen as a localised shrunken fibrous patch, suggesting tendon in colour, and related to occlusion of a corresponding coronary branch. It may be limited to the endocardial aspect or involve the whole thickness of the ventricle. There is invariably hollowing of the endocardial surface, but external bulging is rare. We have seen almost complete organisation of an infarct in a case dying six weeks after the onset of the attack. The frequency of old or of multiple cardiac infarction post mortem confirms the growing clinical experience that many individuals survive the infarction for considerable periods.

Cause of Death.—Of the 83 post-mortem cases, including seven cases of coronary occlusion without infarction, the immediate cause of death was cardiac failure in 62, of which 24 (29 per cent.) were brought to hospital dead. In the remaining 21 cases death was partly or entirely due to other causes such as perforated gastric ulcer, strangulated hernia, surgical operations, malignant disease, &c.

Complications.—Rupture of the heart was present in five cases and aneurysmal bulging in five. In one case there was hæmopericardium without complete rupture. Intracardiac thrombosis, embolism, and pericarditis are mentioned later.

The Clinical Syndrome.

Incidence.—Of our cases 93 were males and 7 females. Of the 83 post-mortem cases 72 were males and 11 females. Thus about 90 per cent. of cases of cardiac infarction were males. The maximum age-incidence was between 50 and 70 years, though it was fairly common after 40. In both the cases under 30 coronary embolism was the cause of the infarction. (Table I.)

Table I.

Cases.	Under 20	Age.						Over 80
		20–29	30–39	40–49	50–59	60–69	70–79	
100 clinical..	—	—	2	20	33	35	9	1
82 P.M. ..	1	1	3	11	24	28	14	—

The immediate results of coronary thrombosis are threefold—shock, anginal pain, and symptoms of heart failure. Later certain special symptoms, due to the cardiac infarction, may arise. Any one of the three elements mentioned may predominate; hence the clinical picture varies in different cases. Three fairly distinct clinical groups may be recognised: (1) sudden death at onset; (2) prolonged anginal pain with shock; (3) dyspnœa and failure without severe pain.

1. *Sudden Death at Onset.*—These patients collapse and die with dramatic suddenness; death overtakes them during the ordinary round of daily life, in bed, at work, in the street, at church, or on the golf course. Death is most probably due to the onset of ventricular fibrillation from sudden ischæmia of part of the heart muscle. At the necropsy coronary thrombosis is found, often without visible infarction. Such cases have little clinical interest, and we have excluded them from our clinical series. They are common subjects of coroners' inquests and are often brought into hospital dead (" B.I.D.").

2. *Sudden Onset with Prolonged Anginal Pain and Shock.*—To this group belong the majority of cases in which the diagnosis can be established during life. The patient may have had angina pectoris for years, or may have had neither pain nor any other indication of cardiac disease. The attack proper is sometimes preceded for a few days by twinges of sternal or brachial pain, occurring apart from exertion, and often attributed to rheumatism or indigestion. These prodromal pains herald the beginning of thrombosis, while the attack proper indicates complete occlusion of the artery.

The onset is abrupt. There is agonising pain in the chest accompanied by shock and collapse. The site of the pain is usually sternal, most often in the middle or lower third, sometimes in the epigastrium. It tends to extend more widely over the chest than in ordinary angina, and is not so readily localised by the patient to a single area. Radiation to one or both arms, to the back, and even to the neck and jaw is common at the onset or later, though the pain may remain limited to the lower sternal region. The onset of pain is rarely attributed to exertion; many patients are roused from sleep by pain, or are seized with it while sitting quietly at rest, after a meal, or during a leisurely walk.

In contrast to the rigid immobility seen during angina pectoris the subject of coronary thrombosis often exhibits marked restlessness, and may get out of bed and walk about, or even writhe in agony on the floor. Occasionally actual syncope occurs. With the pain the signs of shock and circulatory failure appear. The expression is anxious and the features may assume an ashen, greyish hue. Sweating is almost invariable and often profuse. Vomiting is usual after the onset and may be repeated for days. Some degree of cyanosis and dyspnœa occur, though dyspnœa may not be a prominent symptom.

Physical examination at this stage reveals little. The temperature is subnormal, the pulse small and scarcely palpable, often rapid, but sometimes normal or even reduced in rate. Usually the rhythm remains normal, but extrasystoles are quite common and in a small proportion an abnormal rhythm is present. The cardiac impulse is feeble or impalpable (unless the heart is greatly enlarged), and the sounds are distant or inaudible. There may be gallop rhythm, but murmurs are rarely heard. Crepitations over the lung bases and enlargement of the liver are early and characteristic signs of heart failure. The blood pressure when first recorded is low, sometimes below 100 mm. systolic.

Course.—The duration of severe pain varies from half an hour to many days; it passes gradually, often leaving a dull ache or soreness and tenderness for a few days. Nitrites give no relief, and in most cases repeated doses of morphia are required. After recovery from the initial shock the temperature rises to 99°–102° F., slight fever persisting perhaps for a week. Leucocytosis up to 20,000 is common, but not invariable. Pericardial friction may be heard within a few days of the onset.

Those who succumb to the attack may die suddenly, often with a recurrence of severe pain, or become increasingly breathless and cyanosed, dying with gross congestive failure in a few days or weeks. Where the attack is not rapidly fatal the immediate course may be that of severe congestive failure with ultimate death or recovery, or else the patient emerges from his prolonged pain without failure, though often with a liability to anginal pain on slight exertion which he may not have had before.

Convalescence is usually slow. The blood pressure rises to normal limits, the heart beat becomes stronger,

the heart sounds get louder, and the patient's colour returns. Tachycardia, if present, may persist for weeks. Embolic complications from intracardiac thrombosis are liable to occur during the first few weeks after the onset; thus there may be pain over the spleen, hæmaturia, hæmoptysis, or signs of cerebral, mesenteric, or peripheral embolism.

Shortly after the attack the heart may appear normal on physical examination and remain so, though the electrocardiogram is often typically abnormal from the first. Nothing is more remarkable than the rapidity with which certain patients can recover from the initial shock and collapse. They may be able to walk about within a few days of the attack, and some may even attempt to resume work despite a recent cardiac infarction. Thus one patient (Case 172), after being in bed for a few days, felt better and got up to go to work. Going down the steps of a public lavatory he collapsed and died. Necropsy revealed a small recent infarct of the left ventricle, with hæmorrhage around the infarcted area and blood leaking into the pericardium. Had he remained in bed he might have recovered. Another patient (Case 76), a male of 47, on waking at 6 A.M., was seized with severe midsternal pain passing down the right arm, accompanied by sweating and faintness, lasting for ten hours, until finally relieved by morphia. The next day only a slight ache remained, and after three days he got up and walked to hospital. There were no abnormal signs in the heart except tachycardia of 110. Temperature 99°. He looked pale and ill. The electrocardiogram was characteristic of recent infarction. We may cite briefly the following two typical cases, the first rapidly succumbing, the second surviving for two years.

CASE 75.—Male aged 65. Had been treated for hyperpiesis; blood pressure 200 systolic. No previous angina, but occasional pain in the chest unrelated to effort. On June 28th, 1926, he was awakened at 3 A.M. by severe pain in the chest and dyspnœa, with sweating. The pain was at the lower end of the sternum and spread across the chest and into both arms; it continued all the next day. When seen at hospital he was pale and breathless. Temperature 99°, later 100° F. Pulse 100, regular. Arteries tortuous. Blood pressure 150/100. Apex beat feeble; sounds normal. Crepitations widespread in chest. No œdema. Dyspnœa increased, Cheyne-Stokes breathing supervened, and he died on the seventh day of his illness. Necropsy: Organising pericarditis round apex; recent infarction of the apex and interventricular septum, with thrombus in the left ventricle over the infarct; severe coronary atheroma and thrombosis of the stenosed left anterior descending branch 2·5 cm. from its origin; pulmonary infarction.

CASE 85.—Male aged 49. No previous angina. On Nov. 1st, 1925, while walking, he was doubled up with sudden severe sternal pain; he vomited repeatedly and sweated. He went to bed, but the pain continued for three days. The next day temperature 100° F.; pulse 100, rising to 120; pain abdominal. He was sent to hospital as an abdominal case. Slight enlargement of heart, sounds distant. B.P. 130/80. Wassermann reaction negative. EC., normal rhythm, left ventricular predominance, low voltage Q R S waves with modified R-T period typical of recent infarction. After two recurrences of pain he recovered. During the next two years he was able to get about, though subject to anginal pain. On Sept. 9th, 1927, nearly two years after his attack, he collapsed in the street and was brought in dead. Necropsy: Extensive old shrunken infarction of the ventricular septum and apex (corresponding to his attack in 1925) and patchy fibrosis of the remaining myocardium. Atheroma of all coronaries and old thrombosis of anterior descending branch. No recent infarction.

Repetitive Seizures.—In the type of case outlined above, once the initial attack is over, there is no immediate return of similar symptoms though milder degrees of pain or "reminders" are common during the first few weeks. In another type the initial seizure is followed by repeated severe exacerbations, sometimes with tachycardia or dyspnœa, each of which may last an hour or more. In such patients the course is protracted and they may remain desperately ill for weeks.

Ingravescent Anginal State.—In some patients, especially those already subject to angina, the symptoms of cardiac infarction are of more gradual onset. The anginal attacks become more frequent and more easily induced, occurring apart from exertion and during the night. The pain lasts longer and is more severe, until after one or more bad attacks a status anginosus supervenes. The patient becomes gravely ill; fever, leucocytosis, fall of blood pressure, and perhaps dyspnœa and œdema follow. Death may be sudden, or gradual from failure, recovery being rare. Such symptoms may arise in cases of gradual coronary occlusion where compensatory collateral circulation is impossible; for instance, in occlusion of the coronary orifices by syphilitic aortitis, as in the following case:—

CASE 183.—Male aged 45. No history of syphilis. He was well until two months previously, when he had his first anginal attack. The attacks became more frequent and more severe, so that he was admitted to hospital. He had frequent bouts of pain at the lower end of the sternum spreading over the whole chest and down both arms, lasting 20 minutes to an hour. No abnormal physical signs were found in the heart. Blood pressure 105/75. Wassermann reaction positive. He appeared to be almost constantly in pain, and after nine days he died suddenly during a nocturnal seizure. Necropsy: Syphilitic aortitis with great stenosis of the mouths of both coronary arteries; recent infarction involving the papillary muscle of the aortic cusp of the mitral valve. Microscopically fibrosis and recent necrosis of the myocardium.

3. *Dyspnœa and Failure without Pain.*—When infarction supervenes in a case with pre-existing signs and symptoms of heart failure the clinical picture may be less distinctive. Pain is not a prominent symptom; it is either absent or quite overshadowed by dyspnœa. A sudden exacerbation of the signs of failure may be the only evidence of cardiac infarction. Gallavardin,[6] especially, has drawn attention to the fact that patients may die of infarction of the heart without ever suffering pain. There may be some "tightness" or "oppression" in the chest. Thus one patient (Case 178) complained to his friends of the sudden onset of breathlessness, and decided to go to hospital next day, but while walking in the vicinity of the hospital he collapsed and died. Necropsy showed severe atheroma and syphilitic aortitis, with aortic incompetence and stenosis. The coronaries were atheromatous, the left circumflex branch was thrombosed, and there was recent infarction of the left ventricle. Another patient (Case 139), aged 65, had been under treatment for hyperpiesis and heart failure. Seven months previously he had had sudden attacks of dyspnœa with a sensation of weight in the chest, lasting for a week. He was seen with a recurrence of severe dyspnœa, and this was followed by congestive failure, hæmoptysis, and fever; he died in two weeks. At the necropsy there was old fibrous infarction of the posterior wall of the left ventricle (corresponding to the first attack of dyspnœa), and recent necrosis of the interventricular septum. The left circumflex branch was completely occluded by atheroma and the left anterior descending branch was stenosed.

Special Clinical Features.

Onset.—In 33 cases the pain began during sleep or in bed, often in the early hours of the morning, and in another 26 cases at home quite apart from exertion. In 22 cases it began during some habitual form of exertion. In the remaining 19 cases details of onset are wanting. Thus in over half the cases the onset of pain was unrelated to effort.

Site of Pain.—In 68 cases the pain was sternal, being at the lower half or in the epigastrium in 43, at the upper half in 9, and recorded simply as sternal in 16. In the remainder the pain in the chest was either widespread or situated abnormally. In 28 cases there was radiation to both arms, in 25 to the left arm alone, and in 8 to the right arm alone. In several the main site of pain was in the back between the scapulæ. As in ordinary angina, the pain may start in the neck or arms before settling at the sternum. Generally speaking the pain was more often at the xiphisternum, more often bilateral, and more widespread than in ordinary anginal attacks.

Duration.—Pain was usually cut short or relieved by morphia, leaving a dull pain or discomfort for days. Recurrences were fairly common. The duration of severe pain in our cases was as follows: 1–6 hours in 41 cases, 6–24 hours in 24 cases, 1–3 days in 22 cases, and longer than three days in 13 cases.

Blood Pressure.—A fall of blood pressure follows cardiac infarction. We have commonly found the systolic level between 90 and 120 mm. within a few days of the attack, the lowest figure being 75 mm. Where there is a pre-existing hyperpiesis the blood pressure may fall and yet be relatively high, and we have observed systolic pressures of 150–170 mm. in such shortly after the onset of infarction; there may then be a further fall or a slight rise corresponding to the degree of recovery. In a few cases, under observation prior to coronary thrombosis, we were able to measure the fall of pressure. Thus in one patient the systolic pressure which before coronary thrombosis had been 200 mm. remained as high as 150 mm. after the attack, though at necropsy a large infarction of the left ventricle was found. In another, whose pre-existing systolic pressure had been 260 mm., it was 200 shortly after the onset of pain and three days later had fallen to 130; five months after recovery it was 190 mm.

Leucocytosis.—Where blood counts were obtained shortly after infarction we found a leucocytosis of 10,000–15,000 common, but not invariable; the highest leucocyte count was 25,800. According to Libman and Sacks[17] leucocytosis may develop as early as one and a quarter hours after the onset of symptoms. They found a leucocytosis of 15,000–20,000 in more than half their cases. We have found fever a more useful diagnostic sign of infarction than leucocytosis.

Fever.—During the stage of initial shock the temperature is subnormal and may remain so in fatal cases. In the majority there is a rise of temperature to 99–102° F. within the first two days, slight fever persisting for 3–10 days. A typical temperature chart is seen in Fig. 1.

Pulse.—A moderate degree of tachycardia, up to 100 a minute, is a common sequel of cardiac infarction, but occasionally a tachycardia of 120 or higher may persist for weeks. The pulse may, strange to say, remain normal in rate even with severe symptoms or in mortal cases, and a sinus bradycardia of 40–60 was recorded more than once. An irregular pulse from extrasystoles was very common either at the onset or subsequently, but abnormal rhythms only occurred in 14 per cent.

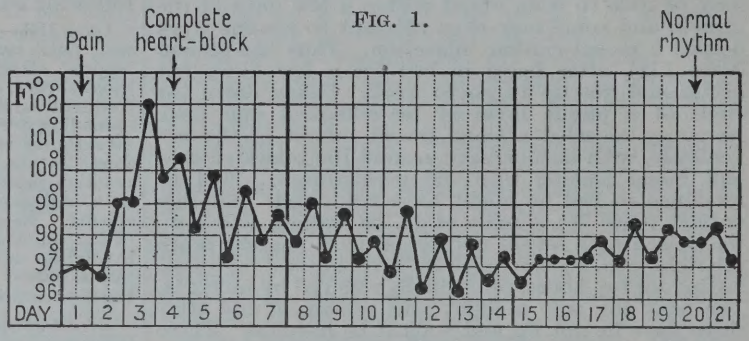
Complications.

Pericarditis.—In our 83 post-mortem records pericarditis was noted in only 11 (13 per cent.). In the 100 cases seen clinically pericardial friction was heard in seven. Usually pericarditis is limited to a small area over the infarction, but it may be generalised, though effusion is rare. In one patient an X ray did show pericardial effusion ten days after the onset of infarction; at the necropsy there was generalised fibrinous pericarditis with 12 oz. of blood-stained effusion, thrombosis of the left circumflex coronary, and infarction of the left ventricle. The infrequency of pericarditis rests on the fact that infarction usually involves the endocardial aspect of the heart, and is often separated from the pericardium by a layer of muscle which obtains a blood-supply from the epicardial vascular network. In some specimens we have examined, adiposis of the pericardium rendered the infarction invisible from the surface.

Intracardiac Thrombosis and Embolism.—Intraventricular thrombus formation over the necrosed muscle is a serious complication of cardiac infarction, for detachment of a clot may lead to embolism. Where the septum is affected the thrombosis may involve both ventricles, so that both pulmonary and systemic embolism may result. Embolic symptoms occur most often within the first few weeks of infarction.

Intracardiac thrombosis was noted in 14 of the 83 necropsies; there was evidence of embolism, old or recent, in 16 cases (3 with infective endocarditis), as follows: renal in 9 cases, splenic in 8, pulmonary in 7, mesenteric in 3, peripheral in 2, cerebral in 1, and abdominal aorta in 1. In our clinical series embolism occurred in 8 cases, as follows: pulmonary 3, cerebral 3, renal 1, splenic 1. The following is an example of multiple embolism following intracardiac thrombosis over an infarction.

FIG. 1.



Temperature chart after coronary thrombosis, showing subnormal temperature followed by pyrexia. Incidentally complete heart-block was recorded on the fourth day (Case 8).

CASE 171.—Male aged 54. Came to hospital complaining of pain in the right calf. Twelve days previously he had wakened in a cold sweat with severe tightness in the chest and had fainted. He remained in bed; four days later he had sudden agonising pain in the right calf and the leg became cold and numb. When seen at hospital there were signs of gangrene of the right leg. Temperature 102° F. No abnormal signs in the heart; pulse 110, regular; blood pressure 125/75. Amputation was performed through the right thigh. Three days afterwards the left leg became cold and mottled, the pulse became rapid and feeble, and on the twenty-ninth day of his illness he died. Necropsy: Coronary atheroma with thrombosis of the left anterior descending branch and recent infarction of the left ventricle and septum; adherent granular thrombus in both ventricles over the infarction. Embolic thrombus in the superior mesenteric, right external iliac and femoral, and splenic arteries, and hæmorrhagic infarction of the small intestine, infarction of the spleen and of both kidneys.

Thrombosis Elsewhere.—In three of our cases phlebitis with thrombosis of leg veins complicated the attack of coronary thrombosis. Occasionally the onset of coronary thrombosis appeared to be related to infection, such as carbuncle, or sepsis elsewhere.

Abnormal Rhythms.—In most cases of cardiac infarction the rhythm remains normal. Extrasystoles are very common, usually ventricular, sometimes arising from more than one focus in the ventricles, as shown by electrocardiograms. Auricular and nodal extrasystoles have been seen. In 14 cases cardiac infarction induced an abnormal rhythm, as follows:—

	Cases.		Cases.
Paroxysmal tachycardia	2	Paroxysmal flutter and fibrillation	1
Paroxysmal fibrillation	5	Partial heart-block ..	1
Paroxysmal tachycardia and fibrillation ..	1	Complete heart-block ..	1
Paroxysmal flutter ..	3		

Acute heart-block following cardiac infarction is of great interest and may be associated with Adams-Stokes attacks. It may be transient and completely disappear if the patient recovers, as in the following instance.

CASE 8.—Male aged 55. First seen in September, 1913. After a week of prodromal anginal attacks he had a severe seizure of midsternal pain lasting 24 hours, with fever (Fig. 1), vomiting, and cyanosis. Heart clinically normal, sounds distant. Arteries thickened. Wassermann reaction negative. The pulse was irregular and polygrams showed partial block; later the pulse became slow and regular,

rate 40, and polygrams showed complete block. He recovered completely and normal rhythm returned. Electrocardiograms in October, 1913, showed T inversion characteristic of cardiac infarction. He died in February, 1925, 11½ years after his attack, with signs of bronchitis.

We have described elsewhere the three cases of flutter due to cardiac infarction.[24] The association of paroxysmal ventricular tachycardia with cardiac infarction has been described by Robinson and Herrmann.[25] In our three cases of paroxysmal tachycardia electrocardiograms were obtained in two, one probably ventricular, the other nodal. In one of our post-mortem series curves of ventricular tachycardia had been obtained.

An abnormal rhythm involving tachycardia is a serious additional embarrassment to the heart, but fortunately these paroxysms are often short, and in the case of flutter or fibrillation can be treated by digitalis. Normal rhythm returned in all our 14 cases. Once paroxysms of fibrillation continued after recovery and eventually fibrillation became established.

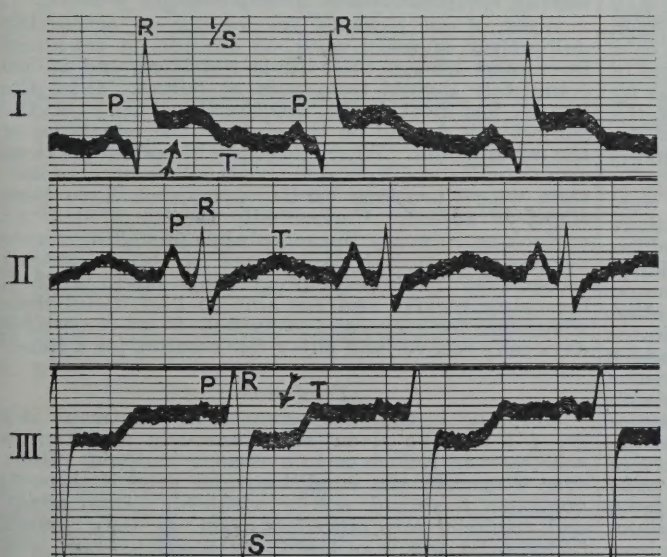
Physical Signs of Underlying Cardiovascular Disease.

In view of its pathology the clinical quest in coronary thrombosis is for signs of general arterial disease and of aortic atheroma or syphilis. In many patients with coronary atheroma the peripheral arteries seem normal, though signs of aortic atheroma, such as a rough aortic systolic murmur with a loud second sound, are often found. X ray examination is an invaluable means of demonstrating aortic atheroma.

Coronary disease alone can cause some degree of hypertrophy of the heart, especially of the left ventricle; but unless high blood pressure or valvular disease is present in addition, cardiac enlargement is not a feature. The fall of blood pressure which follows myocardial infarction can mask an underlying hyperpiesis, and this should be suspected whenever the heart is really large. The clinical findings in our 100 cases were as follows:—

	Cases.
X ray examination {Aorta normal, 29 / „ enlarged, 39}	68
Clinical evidence of aortic atheroma	26
Peripheral arterial thickening	36
Intermittent claudication (2 with gangrene of toes) ..	8
Syphilis (certain)	5
„ (doubtful)	5
Hyperpiesis (B.P. 200 or more) apart from attack ..	15
Moderate hypertension (150–200)	34

FIG. 2.

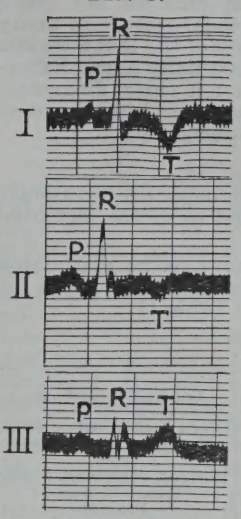


Electrocardiogram taken four days after coronary thrombosis, showing plateau type of curve; the R-T period is elevated in lead I. and depressed in lead III., as indicated by arrows (Case 79).

Relation to Angina Pectoris.

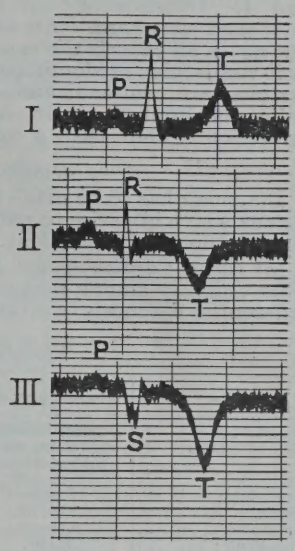
The incidence of previous angina was as follows: previous typical angina, 45 cases; previous atypical pain, 8 cases; prodromal angina only, 9 cases; no previous angina, 38 cases. Which means that half those who get cardiac infarction have never suffered from angina until the onset of their attack or immediately before it.

FIG. 3.



Electrocardiogram taken three weeks after coronary thrombosis, showing inversion of T wave in lead I. and also in lead II. (Case 66).

FIG. 4.



Electrocardiogram taken two and a half weeks after coronary thrombosis, showing inversion of T wave in lead III. and also in lead II. (Case 82).

Coronary thrombosis may initiate angina pectoris, complicate its course, or prove the fatal termination. It is increasingly clear, both on pathological and clinical grounds, that many patients hitherto considered simply as cases of angina pectoris are actually suffering from a past coronary thrombosis. In other words, we are witnessing a splitting up of angina pectoris into two component parts, which clarifies its pathology. First, the group in which coronary occlusion is a gradual process from atheroma or syphilis and leads to scattered myocardial fibrosis, and in which the clinical history is of anginal pain on exertion becoming more frequent and more easily induced with the passage of time. Secondly, the group in which, at the onset or during the course, an acute infarction occurs, usually from coronary thrombosis, and in which the history includes one or more of the outstanding attacks we have described. If the attack is not too remote the electrocardiograph will often confirm the diagnosis. We cannot discuss here the various theories which have been advanced to explain the causation of anginal pain, but we believe that the study of coronary thrombosis has nailed angina for ever to the tree of decaying coronary arteries.

The Electrocardiogram.

As a rule the electrocardiogram after cardiac infarction is characteristic, and occasionally it provides the only objective sign of a cardiac lesion. Fig. 2 shows a typical curve taken four days after the onset of symptoms. The diagnostic feature is the absence of an iso-electric period between the R S and T waves, so that a plateau type of curve results in which the R-T interval is either elevated or depressed.[23] After a few weeks characteristic changes in the T waves are

usually seen. There is a deep inversion of T in either lead I. or lead III., together with a lesser degree of inversion or flattening of T in lead II. These inverted T waves are sharply pointed and often of large amplitude. Typical curves are seen in Figs. 3 and 4. Observations on these changes are being published elsewhere. An additional feature in many but not in all cases is the small size of the Q R S waves. Left ventricular predominance is usually seen. Extrasystoles are common, and, though their diagnostic value is limited, their occurrence after cardiac infarction is more than a coincidence.

Diagnosis.

Diagnosis has to be made from other cardiovascular lesions which give rise to pain and dyspnœa and from acute abdominal conditions.

(*a*) *Other Cardiovascular Lesions.*—The distinction from ordinary angina pectoris is not difficult, and the differential diagnosis is given in Table II.

TABLE II.

—	Angina pectoris.	Cardiac infarction.
Onset	During exertion.	Often during rest or sleep.
Site of pain	Sternum, often mid-sternum.	Sternum, often lower third.
Attitude	Immobile.	Restive, even walk about.
Duration	Minutes.	Hours or days.
Shock	Absent.	Present.
Dyspnœa	Absent.	Often present.
Vomiting	Rare.	Common.
Pulse	Unchanged.	Small, often rapid.
Temperature	No fever.	Fever follows.
Blood pressure	Normal or rise.	Fall.
Heart sounds	Normal.	Distant, sometimes gallop, or pericardial rub.
Congestive failure	Absent.	Commonly follows.
Electrocardiogram	Often abnormal.	Usually diagnostic.

Intrapericardial rupture of the aorta may closely simulate coronary thrombosis, but always proves fatal. More important is the distinction from paroxysmal dyspnœa of cardiovascular disease in which there may be oppression in the chest; the persistence of high blood pressure and the predominance of dyspnœa over pain suggest paroxysmal dyspnœa. Acute œdema of the lungs has been confused with angina pectoris by some French writers (angina of decubitus). When the patient is restless and the pain too prolonged for ordinary angina we have seen coronary thrombosis diagnosed as neurosis.

(*b*) *Abdominal Conditions.*—Six of our patients were admitted to hospital as surgical cases, and in others abdominal disease was at first suspected. Sudden severe epigastric pain, with tenderness and rigidity, vomiting, shock, and a small rapid pulse are common manifestations of cardiac infarction, and must often suggest such conditions as perforated gastric or duodenal ulcer, acute pancreatitis, or gall-bladder disease. Careful inquiry should be made for previous anginal pain as opposed to gastric pain, and a search made for evidence of heart failure. An electrocardiogram may settle the question. In doubtful cases the following point to a cardiac origin: (1) a history of previous sternal pain on exertion, relieved by rest; (2) radiation of the pain to the arms, neck, or jaws, at the onset or in previous attacks; (3) signs of failure, such as dyspnœa, cyanosis, crepitations at the lung bases, enlargement of the liver, or œdema. A patient may actually have chronic peptic ulcer as well as coronary atheroma, when there will be a history of both gastric and anginal pain. One of our patients (Case 81) died of perforated duodenal ulcer six weeks after a typical attack of cardiac infarction which was confirmed post mortem. In 8 of our 83 post-mortem cases (10 per cent.) there was chronic gastric or duodenal ulcer, a fact suggesting an ischæmic origin for some such ulcers.

Course and Prognosis.

Of our 100 cases 31 have died, one not traced is probably dead, and 68 are still alive. Twelve patients died within a month of the attack, 11 in 1–6 months, 7 in 6–24 months, and 1 after 11½ years, the average duration of life being six months in these 31 patients who died. Of the 68 known to be still alive the duration of life after the attack has *so far* been longer than five years in two cases, 2–5 years in 9, 1–2 years in 19, 6–12 months in 16, 1–6 months in 20, and less than a month in 2, the average being just over 13 months. The average survival period up to date for the whole series is just under 11 months, but this will be much longer when all cases have been followed to their termination. In White's [29] series of 62 cases of coronary thrombosis, of which half were alive at the time of reporting, the average survival period was 20 months. Our figures do not indicate the full mortality of coronary thrombosis as our series does not include those dying at the very onset. On pathological as well as on clinical grounds, we can confidently assert that a patient seen alive with coronary thrombosis is more likely to survive than to succumb to the attack. Old healed infarction is almost as frequent a pathological finding as acute necrosis, though a far higher proportion of cases of recent infarction come to post-mortem for a coroner's inquest. There must be every grade of infarction, according to the calibre of the occluded vessel, the largest proving rapidly fatal, the smallest passing unrecognised during life, though we think that any large scar found in the heart must have had its counterpart in the clinical course.

In giving a prognosis in a case of severe anginal pain it is essential to differentiate between coronary thrombosis and a bad attack of ordinary angina pectoris. Urgent symptoms may arise from a small infarction; but this can heal and thus allow of improvement, whereas in severe angina from progressive and relentless coronary disease change can only be for the worse. Sudden death may ensue within a few hours or days in any type of case; the additional risk from embolism becomes remote after a few weeks. If pain is prolonged and resistant to morphia, if dyspnœa is intense, or if congestive failure progresses rapidly the prognosis is correspondingly worse.

Eight of our patients are leading an active life doing their ordinary work, 33 are able to get about in comfort though their life is restricted, and 25 are completely invalid from pain or failure. Once the infarct has healed the functional capacity of the subject will depend on the state of the remainder of the myocardium. Where there is a history of previous severe angina or dyspnœa recovery will be less complete than where previous cardiac symptoms have been slight or absent. Undoubtedly far too gloomy an outlook on coronary thrombosis has prevailed, largely because non-mortal cases have so often escaped recognition. A hopeful prognosis is often justified, for many survive and are able to lead useful lives sometimes for years, and even those in grave peril for days may recover and enjoy fair comfort for a time.

Treatment.

Morphine is the first essential in treatment and gr. ¼–½ may be given subcutaneously as often as necessary to reduce or to overcome the pain. However desperate the condition, and even if there is vomiting, it should not be withheld. Amyl nitrite and trinitrin are powerless, and as they induce tachycardia and may lower the blood pressure still further they are expressly contra-indicated. Complete physical rest is the next essential in treatment. All preparations for a serious and lengthy illness should be made at once.

Digitalis for the first time finds a place in the treatment of cardiac pain, for it can reduce the pulse-rate and relieve the congestive failure which may accompany or follow the pain of cardiac infarction. In several of our cases it was definitely beneficial in this way. If symptoms or signs of failure appear, and they should be looked for, a dose of ℥ xx. of the tincture, four-hourly for six doses, would be suitable, followed by ℥ x.–xx., three times a day. Remembering the state of the myocardium, we shall studiously avoid toxic effects. Paroxysms of flutter or fibrillation may be

treated similarly, if not by strophanthin intravenously (gr. 1/200–1/100). Even in simple or in paroxysmal tachycardia in these circumstances digitalis may be tried.

Absolute rest in bed for not less than a month is imperative to allow healing of the infarct and to reduce the risk of embolism. The subsequent management will be that of a patient known to be arteriosclerotic and prone to anginal pain, though the probability of another cardiac infarction is not great. Convalescence will therefore be prolonged and the return to ordinary life postponed as long as possible. If exertion is restricted to less than that which induces pain greater capacity may ultimately be obtained.

It is a pleasure to express our indebtedness to the staff of the Pathological Institute of the London Hospital. Prof. H. M. Turnbull, Dr. W. W. Woods, and Dr. A. B. Bratton have taken great trouble in examining specimens and sections and in collaborating in the pathological portion of this paper. Colleagues on the medical staff and in practice have kindly helped with clinical cases and details; we thank Lord Dawson, the Medical Unit (Prof. A. W. M. Ellis), and Dr. R. A. Rowlands for permission to publish particular cases, and Dr. G. T. Western for the Wassermann reports.

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COST OF MANCHESTER HOSPITAL SERVICE.—"The Good Samaritan," the year-book of the Manchester and Salford Medical Charities, for 1927, contains a remarkable statement as to the cost of treatment in the hospitals of those two boroughs. The average cost per head of population in England and Wales is 3*s.* 10½*d.*; in Manchester and Salford it is 7*s.* 8½*d.* The explanation suggested is that they are great hospital centres offering unusual facilities for treatment, and that within their borders the conditions of life are such as to increase the incidence of disease and accident.

MOTORISTS AND HOSPITALS.—Beginning with Jan. 1st every motorist who takes out a driving licence in Sheffield is to be asked to contribute a shilling to the funds of the Sheffield Joint Hospitals Council. It is believed that £2000 a year can be raised in this way. When this voluntary tax is paid the licence will be stamped "Sheffield Hospitals Council: Traffic Casualty Fund." At the Royal Hospital and the Royal Infirmary last year close upon 6000 people were treated for injuries caused by street accidents. About 600 were admitted to the wards, at an estimated cost of £10 per patient.

THE ÆTIOLOGY AND TREATMENT OF ACUTE POLIOMYELITIS.*

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FOR several reasons poliomyelitis always awakens concern on the part of the clinician. He cannot foretell, in a given case, whether disabling sequelæ will make their appearance in moderate or in aggravated form, nor from the prodromal symptoms can he determine whether involvement or escape is to be the outcome. No definite relation has as yet been established between the mildness or otherwise of the initial syndrome and of the paralytic consequences. Even if continued paralysis is found in but 25 per cent. of all cases he does not know which are to exhibit this unenviable prominence. In one clinical type the early febrile manifestations are so trifling as practically to escape notice, but the fulminant onset of palsy in some of these emphasises afresh the serious nature of the disease's uncertainties. When invasion of the nervous system is apparent the outlook remains still indeterminate, since residual incapacity is not always proportionate to intensity of early paralysis, while cases are known of a relapsing type, in which fresh palsies appear at appreciable intervals.

Poliomyelitis presents all the characters of a specific infection, and seems to be definitely independent of any other. When rare cases occur of poliomyelitic symptoms supervening in the course of some fever or exanthem of recognised class they are to be regarded either as a coincidence—the fever ostensibly providing a favourable opportunity for the invasion of the virus of the other—or as offering a superficial resemblance to genuine poliomyelitis, but caused in reality by the exceptional localisation and action of the febrile virus, whichever it may happen to be. For example, I have had under care recently a severe case of "poliomyelitis following measles," in which examination has satisfied me that the condition has been in fact a partial transverse myelitis of the rare morbillous type. That other agents than the virus of Heine-Medin's disease can produce an acute atrophic palsy must not be overlooked.

Incidence.

From compilation of numerous and diverse statistics (which need not be cited here) it can be shown that over 75 per cent. of all cases, epidemic and sporadic, develop in children who have not passed the age of 9 years; in the New York epidemic of 1916 no less than 83 per cent. were under 5.[1] A further interesting point emerges, that in the more severe epidemic outbreaks the incidence on youths and adults tends on the whole, though not with regularity, to increase in comparison with that of sporadic outbreaks. In respect of the earliest years of life the disease affects children of each of the first three with a certain equality; of those cases that begin in the first year a majority develop during the second six months. Congenital poliomyelitis is probably non-existent, though the possibility of intra-uterine infection has been discussed by Batten[2] and others. A case is known in an infant 12 days old (Gunewardene[3])—as far as I have been able to discover, the earliest on record; at the other extreme it has been seen at 54 (Krabbe[4]), and even, apparently, at 67 (Gombault).

The disease has appeared at intervals all over the world, nor has it spared the coloured races. In 1909 an outbreak occurred in Cuba, affecting 140 persons; in 72 cases in which the race was specified 60 were whites, 4 half-castes, and 8 negroes. The Melanesian island of Nauru in the Pacific was visited in January,

* Opening paper at a discussion at the Harveian Society of London, Nov. 17th, 1927.

1909 [5]; 470 cases developed in natives of the island; the majority of the remainder of the total 700 cases were those of imported labourers from the Caroline islands; imported Chinese were unaffected, and only three Europeans out of 80 whites suffered. By way of contrast, however, I may point out that of the 752 New York cases of 1907 [6] only two occurred in coloured children, yet in proportion to the population there should have been something like 14. It is impossible not to feel that these apparent anomalies of infection can be explained only by considerations of direct or indirect openness to attack and of acquired or natural immunity, which must differ materially in different epidemic visitations.

Age is seemingly the sole predisposing factor; inherited and familial "tendencies" can be quite left out of account. Neuropathic "taint" has no significance, since the affection often seizes juveniles who are physically and mentally robust—an observation made by Heine [7] as long ago as 1840 and often commented on since. Family involvement varies considerably also in different epidemics; among the 752 New York cases (1907) there was only one instance of three members of a family being attacked, whereas Trethowan's [8] figures for the Swedish epidemic of 1911 differ one might think fundamentally.

Cases in each family	1	2	3	4	5	6	7	8
Number of families	456	93	46	21	8	2	1	2

In no less than 31 families two to four cases occurred on the same day, and somewhat analogous figures are furnished by Wickman.[9]

The practitioner ought to bear in mind that poliomyelitis is constantly endemic in Great Britain, as in other countries, near and far; I append official figures for 1925.

—	England and Wales.	France.	Germany.	United States.
January	26	10	17	132
February	23	18	28	98
March	17	16	21	89
April	12	17	18	106
May	16	11	25	104
June	15	8	18	254
July	17	15	20	805
August	28	39	31	1428
September	61	19	57	1359
October	57	25	53	932
November	44	20	45	341
December	28	24	37	161

From this table the pre-eminence of infection in the summer and autumn months appears clearly, especially late summer and early autumn, and this feature has been reproduced in by far the greater number of the many epidemics that have been recorded; it receives corroboration from the development of Australian outbreaks in their autumn months of March and April. Such epidemics may extend into the winter months, none the less, a point of significance when the remarkable resistance to cold shown by the virus is carried in mind, and not without bearing on the fashion of spread of the disease.

Transmission of Infection.

Vexed questions of consummate epidemiological importance still obscure our knowledge in respect of the modes of infection. We may note, in the first place, that apart from the production of experimental poliomyelitis in monkeys (and in certain genera only, be it specially remarked) no satisfactory proof of its specific occurrence in domestic animals is forthcoming; hence the occasional reports of synchronous infective maladies in chickens, horses, &c., during epidemic appearances of the human disease can be discounted. Elaborate tests conducted at various times exclude the likelihood of flies, fleas, bugs, or lice playing any part in communicability. Experimental transmission by means of the bite of the stable-fly, *Stomoxys calcitrans*, demonstrated by Rosenow in 1912, is now discredited, nor has the virus been found in the blood of affected subjects. Whether it may adhere to inanimate objects is not fully known, though some evidence points in this direction; Neustadter and Thro [10] succeeded in inoculating monkeys by using dust from the sick room (their work has not been confirmed); carriage of infection by a picture is mentioned by Wickman. Drinking-water, milk, fruit, other articles of food, and numerous other possibilities in respect of modes of transmission have all been scrutinised at one time or another and proved more or less consistently negative. Poliomyelitis has frequently developed in infants purely breast-fed. However, in a small epidemic of eight cases at Cortland, N.Y. (Knapp, Godfrey, and Aycock [11]), the individuals affected all drank milk from a farm at which a case of poliomyelitis had occurred in a youth of 16, who actually continued milking some of the cows while he was in the acute stage of the disease. This is presumably an instance of accidental contamination of milk and of transmission thereby, and it is significant out of proportion to the rarity of the occurrence, since it proves that case-to-case infection is not the sole means of dissemination.

By common consent, as I consider, and more especially since the researches of Wickman, direct contagion from one human being to another is now accepted as the main though not actually the unique means of spread. Whether this is effected by direct contact through breath, clothes, or otherwise, or by indirect contact via carriers, is still as obscure as in the case of various other fevers, but the fact remains. Evidence has steadily accumulated pointing to the existence of the virus in the nasal, buccal, or faucial mucosa of individuals who may or may not develop the disease; in other words, carriers (themselves mostly though not constantly immune) harbour the infection and transmit it on occasion, and are possibly more numerous than actual cases. The often-cited experience of Kling, Petterson, and Wernstedt [12] revealed the existence of 18 carriers among the non-infected members of six families, in each of which only one person suffered. Whether active carriers of a really chronic kind are to be found has not yet been satisfactorily demonstrated, and has been surmised rather than proved by some who favour the carrier theory to the exclusion of other modes of propagation; according to Flexner and Amoss the virus disappears from the nasopharynx within a few weeks.

Carriers notwithstanding, contagion, when all germane data are taken into consideration, must certainly be regarded as relatively rare. The disease, ordinarily speaking, never runs riot. Clinical evidence against indiscriminate spread in schools, hospitals, institutions, and closed communities of any kind is direct and overwhelming. In one of the Massachusetts epidemics only 35 patients out of 150 cases were attending school, and of the 35 no less than 22 attended different schools. Bed-to-bed infection in hospital has never been regarded as other than a negligible risk. Spontaneous infection of experimental monkeys has never been recorded, and no instance of the development of the disease in those whose duties have required them to handle such laboratory animals is known.

When, therefore, the question of infection is reviewed as a whole, and in the light of the illustrations selected for this paper (to which I might readily add) its peculiarities and anomalies must at once strike the critical mind. On theoretical grounds individual susceptibility should depend on whether an abortive attack has occurred in infancy, conferring protection when infection is rife, or on "natural immunity." In respect of the former, doubtless one or other "cold" or "catarrh" or "feverish turn" may as a fact have been an incomplete or abortive attack of endemic poliomyelitis, though unless the epidemic variety is about at the time such trifling illness can scarcely ever be adjudged to have been in reality poliomyelitic. As for the latter, we are not yet in a position to analyse natural immunity objectively. Of obvious importance is the matter of the duration of the infec-

tious stage in a given case; unfortunately definite and unmistakable facts and figures are very difficult to come by in this connexion. Yet how much that is still obscure hinges on it. That both abortive cases and healthy virus-carriers must be a menace seems undeniable, hence isolation of affected patients seems indispensable; yet, as we have seen, infection never appears to proceed regularly from one contact to another in an unending series. My own experience, in more than one family circle, has given me the impression that direct infectivity is at its maximum during the incubating and preparalytic stage, and that once the virus has reached the nervous system, as revealed by the usual nervous symptoms, it ipso facto becomes tucked away, so to speak, in the deeper-seated tissues of the individual concerned and is less communicable; he is less infective. If carriers are infective, as is allowed, they bear the virus in a state of activity superficially, one might say, on their person—not in its recesses; hence the possibility of spread of contagion by means of "droplets" of virus-bearing mucus (as Dudley [13] thinks), or otherwise. Were support to be lent to this view by substantial investigations it might explain comfortably the fact that since patients admitted to hospital wards have usually reached the stage of paralysis indiscriminate spread *never* takes place there. I have not discovered any direct observations on the specific point whether germination of the virus in the nervous system is accompanied by its attenuation or disappearance from the upper respiratory passages; inquiries of this kind would surely repay the highly technical labour they must entail. Of course, I am well aware of the difficulty in respect of familial infection; two members may have been infected with more or less simultaneity from a common source and not from one another.

Practical Considerations.

It will be acknowledged, then, I think, that we have not reached a stage when contradictory pronouncements by different authorities are no longer to be expected. Regrettable as they may appear, especially when public anxiety is aroused, they are no more than legitimate deductions from personal experience; different view-points are adopted only because knowledge is still imperfect. It has been my practice to advise and act along the following lines:—

1. A patient in whom the disease is developing (it is unnecessary to give here the objective data on which reliance may be placed for early diagnosis) is infective, and as such must be isolated. Though he may not transmit the disease to another person he may make him a carrier, and this possibility must be guarded against.

2. A patient who has run the risk of infection and whose case may be purely abortive is equally infective and similar precautions are desirable with him.

3. A patient in whom paralytic phenomena have appeared is possibly (probably ?) past the stage of infectivity by direct contact.

4. A person who has come in contact with a poliomyelitic patient when the latter is incubating or developing the affection may show no symptoms, early or late, but nevertheless should regard himself as a possible conveyer of infection and as such should adopt prophylactic treatment.

5. The incubation period being fairly well established within the average limits of two to ten days, and less certainly extending on occasion to a fortnight, contacts may be regarded as having passed out of danger *to themselves* in three weeks (this period was adopted by many Swedish physicians in their epidemics and seems to have proved satisfactory).

6. How long, however, contacts may constitute a danger *to others* is more difficult to estimate. I have quoted Flexner and Amoss to the effect that the virus disappears from the mucosæ within a few weeks.

Until more is known in reference to this latter point contacts who become carriers remain potential mischief-makers, seeing that their effective segregation over a period of, say, two months presents almost insuperable difficulties. It will be gathered from the sketch given of the tactics to adopt, that attention must be paid to the problems offered by patient developing the disease, by abortive case, and by healthy contact respectively.

Means of Treatment.

We may now pass to a consideration of some aspects of the therapeutic difficulties presented by this disconcerting disease.

Obviously, in the case of all contacts, an effort must be made to destroy the infecting germs, harboured as they definitely seem to be in the upper respiratory passages. Frequent disinfection of nose and throat with douches or gargles of potassium permanganate (1 in 5000), peroxide of hydrogen (1 per cent.), liq. sod. chlorin. (0·5 per cent.) or some other chlorine-containing preparation is advisable. Similar procedure should, of course, be undertaken with increased vigour in any cases beginning to show signs of prodromal infection. Once paralytic symptoms develop they are valueless.

The sole *specific* treatment consists in intraspinous injection of immune serum, a method which has been used with moderate success (Netter,[14] Batten,[15] Amoss and Chesney [16]; cf. also Draper,[17] Flexner and Amoss [18]). An attack of poliomyelitis confers immunity for years, the patient's serum remaining active indefinitely, so that if a suitable convalescent can be obtained the method is simple enough. From some 30 c.cm. of the giver's blood, obtained by venepuncture, the serum is separated, warmed, and injected into the spinal theca by the lumbar route in amount corresponding to the quantity of fluid withdrawn, say, from 4 to 12 c.cm., and this treatment can be adopted daily for some days, commencing immediately the diagnosis is made, and if possible in the preparalytic stage. The practical difficulty is, however, at once apparent—viz., to find an appropriate convalescent or old case at hand precisely when the need arises, since the treatment is valueless for cases that are subsiding.

One reason, perhaps the chief, for delay in connexion with *animal sera* is the difficulty of controlling experimental results in the monkey. Once induced, the experimental disease is much more fatal than the human disease, and attenuation of the virus for therapeutic purposes has not yet been satisfactorily accomplished. With some other human strains, on the contrary, the monkey cannot be infected at all, or else they so quickly lose their power of inducing the disease as to be equally valueless. Until better control of the virus in artificial circumstances is attained the problem of appropriate serum therapy will remain beset with difficulties.

Encouraging results have been announced by Rosenow and Nickel [19] for their "streptococcic poliomyelitis serum," obtained by immunising horses with their "pleomorphous streptococcus" said to be derived from human cases of the disease, and injected either intravenously or intramuscularly in quantities ranging from 15 to 75 c.cm., according to age. They claim a much lower mortality-rate and less residual paralysis in 1113 patients treated by this technique than in a series of controls for whom other methods were utilised. I have had no experience of this particular treatment, and most of those who are familiar with the disease bacteriologically do not accept the streptococcus as a causa causans. Nevertheless the method possibly deserves to be tried out further.

No medicinal agent has been proved to exercise a beneficial influence on the course of the disease, although urotropin in large doses is frequently utilised. I have myself employed the drug after a fashion practically identical with that recommended by Hurst,[20] without obtaining any impressive results.

Recently attention has been directed to the procedures adopted and warmly advocated by Bordier.[21] These consist in a combination of spinal radiotherapy with diathermy. As soon as spinal topical diagnosis is established X ray radiation is at once applied; for children under 2 years the dosage is about 200 units R per séance, or 3 units H in a series of three successive séances, measurement being made at the skin level under a filter of 6 mm. of aluminium.

Above the age of 3 the dose may be increased, reaching in the adult 1000 units R or 5 units H in a series of three applications. The rays should penetrate in a direction at right angles to the vertebral laminæ. After one series of treatment some 25 days should elapse ere another is undertaken. The diathermy part of the treatment is intended to favour the nutrition of the tissues of the paralysed limb. It should be utilised from the outset independently of the radiotherapy, and should be carried out daily for about ten minutes. The sinusoidal current is also a useful adjuvant. Favourable reports on this Bordier technique have already been published by Bergamini,[22] Sabatucci,[23] Philips and Galland,[24] and others. Experimental confirmation of its usefulness has been recorded by Kraus.[25] A review of the whole procedure was made a few months ago by Tizier.[26]

Much can be done to mitigate the ultimate sequelæ by absolute rest in bed for at least three weeks and by concentration on the affected muscles. For these the "zero" position must be obtained—i.e., that in which a given muscle is entirely relaxed and its opposing muscle prevented mechanically from exercising its action by appropriate splinting or the use of plaster "shells." Each case requires individual treatment, but the principles are the same in all—no loading or stretching of an atonic muscle is to be allowed. Bearing in mind the spinal site of the lesions the physician must try to maintain the nutrition of the affected groups until such time as recovery takes place from within. Hence there is a place in his therapeutic scheme for the employment of warmth to the limb or limbs, skin friction, warm baths or douches, and gentle massage and movements; the former (warmth) should be carried out from the beginning, the latter after the first week or two are over. Electrical applications of a stimulating kind are less advantageous than is commonly supposed, and in any case are not called for at an early stage.

Later, the same rational physical therapy should be persevered with, active, passive, and resistance movements being practised, usefully in a warm bath, to obviate contracture. At the end of 12 months, speaking generally, further spontaneous improvement is as unlikely as adequate response to a continuation of physiotherapy, and its place should be taken by orthopædic measures, if such are called for.

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DAVID ELDER INFIRMARY.—This institution at Govan, which has been erected and endowed from a bequest of £100,000 by the late Mr. Alexander Elder, of Liverpool, has now been formally handed over to the trustees of the Glasgow Western Infirmary.

THE CURE OF GASTRIC AND DUODENAL ULCERS BY INTENSIVE ALKALINE TREATMENT.

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(With Illustrative Plate.)

THE treatment of ulcers of the stomach and duodenum has always been the subject of a great deal of investigation, but until comparatively recently the general opinion held by the profession was that these conditions were more or less incurable by medical means. The natural consequence was that very often patients suffering from these ulcers were subjected to various kinds of surgical operations in an attempt to give relief from the distressing symptoms so often present. No doubt surgery had many great triumphs in this field, but it had also many failures, and on the whole the treatment of these conditions was very difficult and unsatisfactory.

Now, however, we possess quite definite evidence that uncomplicated cases of gastric and duodenal ulcer respond very quickly to medical measures and that by quite simple means we are able to cure these lesions. The principle involved is based on the view that these ulcers are irritated and so prevented from healing by the action of the acid secretion of the stomach. When this factor is removed rapid recovery usually takes place, and the patient's life is changed from one of distress and misery to a condition of comfort and well-being.

Hyperacidity and Gastric Ulceration.

It is common experience that some degree of hyperacidity exists in the patient who is suffering from gastric or duodenal ulceration. This statement has been denied by some observers, but the fact is that the term "hyperacidity" is, perhaps, rather misleading in this connexion. It is quite true that there is often no very definite increase in the *concentration* of hydrochloric acid in these patients. When a test-meal is given and the hydrochloric acid estimated, it may not be higher than normal, though in some cases there is certainly a tendency for a slight increase in amount. The finding of a normal concentration of hydrochloric acid does not necessarily indicate, by any means, that no hyperacidity exists. What really happens in these cases is that acid tends to be secreted *after digestion is completed and after the meal has left the stomach.* There is a secretion of gastric juice when there is no need for it. This tendency for the stomach to go on producing an acid secretion after the needs for gastric secretion are over undoubtedly plays a part in sustaining the chronic condition so often observed in stomach abrasions. By "hyperacidity," then, we mean a tendency for hydrochloric acid to be formed for some time after digestion is completed. This may go on for an hour or two after stomach digestion is over and then cease, or the condition may persist for many hours; indeed, in some patients it may be found that a very considerable amount of hydrochloric acid is present in the resting stomach when the contents are removed before breakfast. In such patients it is obvious that secretion of acid must have gone on for a very long time after the last meal. Now, since there is no food in the stomach to combine with this acid, it seems obvious that this secretion will tend to digest any part of the stomach that has in any way lost its normal resistance to gastric digestion. Whether or not this excessive acid

can per se give rise to an ulcer is not quite certain, but there is little doubt that the condition tends to make an ulcer worse when it is present and to prevent it from healing. If this is admitted—and all the reliable evidence available supports this view—then it is obvious that the best conditions for the healing of an ulcer would be those in which the effect of this excessive secretion of acid is overcome. The best method of treatment would be to stop this secretion, but this is often impossible as long as the ulcer remains, for it acts as a source of irritation. Indeed, the conditions existing in the stomach of a patient suffering from an active ulcer may be regarded as acting in a vicious circle. The ulcer causes irritation which tends to produce an increased secretion of acid; this acid in turn irritates the ulcer, and so matters go on from bad to worse. If we could break this vicious circle either by preventing the injurious action of the acid or by acting directly on the ulcer, the stomach condition in general should improve and the related symptoms should disappear. It is interesting to note that after a successful gastro-enterostomy the contents of the stomach are generally alkaline, or at any rate very much reduced in acidity. On the other hand, when operation affords no relief to the patient, it will be found that the stomach contents still remain highly acid. This observation suggests that the benefit to the patient arising from a successful gastro-enterostomy is in large measure dependent on a change in reaction produced by the mechanical alterations brought about by the operation. How this alteration is brought about is quite easily understood. Presumably the alkaline pancreatic contents pass directly into the stomach via the stoma and so help to neutralise the acid. This assists the ulcerated surface to heal, with the result that the stimulus to increased secretion is gradually overcome. This, in turn, further helps the healing of the ulcer, so that in time it may disappear altogether. The question now arises: Can we by medical means prevent this deleterious action of the acid for a sufficient time to allow the ulcer to heal? There is no doubt whatever as to the answer. In practically all uncomplicated cases of gastric and duodenal ulcer it is quite easy to do this with practically no inconvenience to the patient. This beneficial result is accomplished by the use of intensive alkaline therapy. Sufficient alkali is given to the patient to keep the gastric acid neutralised during a period sufficiently long to enable the ulcer to heal.

The details of this treatment are given below, but it may be said here that the results obtained are as marked as anything known in therapeutics. It is quite extraordinary how these patients respond to this method, but the treatment must be thorough. The usual small doses consisting of a few grains of the ordinary alkalis are of little or no permanent value. Indeed, such treatment may in certain cases do harm rather than good, for insufficient alkali may tend to stimulate acid production instead of decreasing the amount.

The Use of Alkalis in Gastric and Duodenal Ulcers.

Of all the various therapeutic agents used in derangements of the stomach it is generally admitted that, in the great majority of cases, alkalis are by far the most successful in relieving symptoms. Without alkalis there would be an appalling amount of stomach distress. Everybody knows how a teaspoonful or so of such a simple remedy as sodium bicarbonate relieves "heartburn" and other distressing symptoms. Many medical men have from time to time used fairly large doses of alkalis in the treatment of ulcer, and some years ago Sippy in America made many claims for this method. Sippy's directions, however, were rather elaborate and many medical men found difficulty in carrying them out. About five years ago we began to use the plan described here in our treatment of gastric and duodenal ulcer at St. Thomas's Hospital. Our view was that the ulcers should heal if the deleterious action of acid stomach secretion could be entirely prevented for a definite period. The results obtained were entirely satisfactory, but we hesitated to publish our experiences until the method had a thorough trial. We are now satisfied that the results obtained by this method are better than any that have hitherto been described, and that recurrences are extremely rare. Patients who had suffered for periods extending up to 15 years and more often recover entirely from their symptoms in a few weeks; in other patients the period may be longer and may extend to a month or two. It is not necessary to discuss here the various views that have been expressed from time to time as to the manner in which alkalis act in stomach disorders. We are convinced that the action is a direct one, and due simply to neutralisation of the acid secretion. Several observers have given it as their opinion that this action of alkali is an indirect one and that it takes place after absorption, but we are confident that it depends on local action in the stomach.

It might be argued that intensive alkaline treatment would prove injurious because it obviously prevents peptic digestion in the stomach, but in practice this is not found to be the case. After all, the stomach is not an essential organ, and if care is taken that all food that enters it is in the form of a thoroughly soft pultaceous mass, then stomach digestion appears to be unnecessary. Apparently, under such conditions the food is passed on into the intestines, where the most important part of the processes of digestion normally take place. There is really no such condition as "indigestion" in the ordinary physiological sense of the word unless the pancreatic and intestinal secretions are lacking. Digestion of food is easily completed in the absence of the stomach. It is probable, however, that even in the presence of an alkaline stomach fluid, a certain amount of pancreatic digestion sometimes goes on in the stomach. At any rate, experience proves that there is no interference with digestion as a whole when large amounts of alkali are given for long periods. What really usually happens is that any so-called indigestion that may have been present is rapidly relieved as indicated by the disappearance of symptoms.

Other objections to the use of excessive amounts of alkali have been raised from time to time. Bogeys such as "alkalosis" and other equally alarming conditions have been described, but they need not be feared. One of us has carried out an extensive investigation into the possible injurious effects of large doses of alkali on the system. The conclusion arrived at is to the effect that no harmful results whatever are produced except perhaps in patients suffering from advanced chronic interstitial changes in the kidneys. In such patients the end cannot be far distant and the point is not of serious import. As a matter of fact, only very small amounts of the heavy alkalis given are absorbed. They neutralise the acid and pass out in the stools. Only traces are found in the urine. As the result of a large experience we can say with confidence that no fears need be entertained as to the possibility of any pathological symptoms from the large doses of alkali given in the treatment as described here. As already mentioned, the results are extraordinarily good. Patients who have suffered extreme discomfort for many years lose their symptoms very rapidly and soon enjoy quite good health. No operative procedures are necessary in the great majority of patients suffering from uncomplicated gastric or duodenal ulcers, for entirely satisfactory results can be obtained by simple medical means. Of course, when the ulcer has penetrated into one of the adjacent viscera, surgery will be necessary. The same applies when adhesions are formed. Also, in cases of organic obstruction of the pylorus, mechanical means must be used to allow of the passage of the food from the stomach. It is, however, sometimes the case that pyloric obstruction may be largely due to an œdematous swelling of the pyloric orifice, and in such cases alkaline treatment often does much good. In one patient under our care marked symptoms of pyloric obstruction were present for several months,

but an operation was definitely refused. This patient was given alkaline treatment and a modified diet, with the result that the symptoms passed over and she has not vomited for more than a year.

Some Observations on X Ray Appearances.

For some time after beginning this treatment we hesitated to carry it out on patients suffering from large pentrating ulcers as indicated by X rays. Later we found that such ulcers usually responded quite readily to the treatment. Our present plan is to try this treatment on all patients with gastric or duodenal ulcers, no matter how extensive the ulcer may appear from the X ray point of view. Also, we get quite as good results in old-standing conditions as in more recent lesions. If the patient does not respond in a week or two it may be taken for granted either that his symptoms are not due to ulcer, or if an X ray shows an ulcer, that there are adhesions to an adjacent viscus. In such cases it is clear that no medical treatment can be of any avail. It is hoped, however, that intensive alkaline treatment will in the future be used more freely and at an earlier stage, and so help to prevent many of these more or less chronic results of ulceration.

After we had convinced ourselves that intensive alkaline therapy was undoubtedly the most efficacious method for the relief of gastric symptoms, we began to follow the local results of treatment by taking X ray photographs at various intervals during the treatment. In practically every case the ulcer as seen by X rays disappeared in a comparatively short time. Several photographs are given here which prove this quite definitely. No matter what the size of the ulcer, if there are no complications, it disappears in a short time varying from a few weeks to a few months. That it is comparatively uncommon to have ulcer complicated by adhesions to adjacent organs seems to be borne out by the results of our treatment, for among the large number of patients we have treated during the last five years, there have only been a very few in whom surgical intervention was necessary.

The majority of the X ray photographs given here show the results obtained with gastric ulcers, but our experience with duodenal ulcers has been equally satisfactory, though, on the whole, we have the impression that perhaps somewhat longer treatment is necessary in duodenal cases. On the other hand, it is certain that many patients suffering from duodenal ulcers lose their symptoms very rapidly. The reason why we chose chiefly gastric ulcers to represent the results of treatment is merely dependent on the well-known fact that these ulcers show up much better in X ray photographs. Duodenal ulcers are often very obscure from the radiologist's point of view, and not infrequently X rays fail to show such an ulcer though undoubted clinical evidence of its presence may exist. That the photographs in which the ulcers have disappeared really depict healed ulcers is fairly certain, when we consider that not a single patient in our series showed a recurrence on the site of the old ulcer after this had healed. In one patient with a very large penetrating ulcer progress went on in a very satisfactory manner, and after six weeks only a very small ulcer was left. The patient felt quite well, but gave up treatment at this stage and began to drink rather heavily. He appeared at hospital one day after a bout of drinking when an X ray examination revealed the fact that the ulcer had considerably enlarged. The fact that the patient's symptoms entirely disappear as the X ray appearances of the ulcer gets less seems to us to prove that this treatment really cures the ulcer. From five years' experience we are definitely of opinion that the great majority of gastric and duodenal ulcers will readily respond to intensive alkaline treatment on the lines described below.

Details of Alkaline Treatment.

The most important point in treating a patient suffering from ulcer is to give a sufficient amount of alkali to control entirely the acid secretion of the stomach. This can easily be done during the daytime, but may be more difficult during the night. Indeed, it may happen that all the good done in the day may be undone at night unless special precautions are taken. In cases of marked hyperacidity the effect of the last dose of alkali often passes off in a few hours, and if no alkali is taken by night, the patient's stomach may be subjected to the action of acid for several hours. In some patients the tendency to produce acid secretion is so marked that the contents of the stomach may show as much as 0·2 per cent. hydrochloric acid or more within two hours or so after a large dose of alkali. No doubt, in such patients there is a rapid emptying of the stomach with the result that the alkali is passed into the intestine. However this may be, it is difficult to realise that a patient who is taking large doses of alkali at frequent intervals may yet have an acid secretion present in the stomach between the doses. The kind of alkali used does not matter very much, but sodium bicarbonate, when given alone, is unsuitable since it tends to excite a definite flow of acid after its neutralising effect has passed over. On the other hand, sodium bicarbonate is a very soluble diffusible substance and is excellent for quick neutralisation; indeed, it should be remembered in this respect that nature uses this salt to neutralise the hydrochloric acid which passes into the intestine during digestion. When given along with some other alkalis of the alkaline earth group there is no objection whatever to the use of some sodium bicarbonate. Along with this salt we use heavy magnesium carbonate and bismuth oxycarbonate. The proportion of these substances may be varied in relation to the effect on the bowels. Bismuth carbonate tends to cause constipation, whereas magnesium carbonate acts in the opposite direction. If diarrhœa is present the amount of bismuth carbonate can be increased, while, on the other hand, if constipation becomes troublesome, it is well to reduce the bismuth carbonate and to increase the magnesia. We have tried many different mixtures of alkalis, but for the last few years we have used a powder of the following composition:—

Sodium bicarbonate	1 part.
Magnesium carbonate (powd.)	2 parts.
Bismuth oxycarbonate	2 „

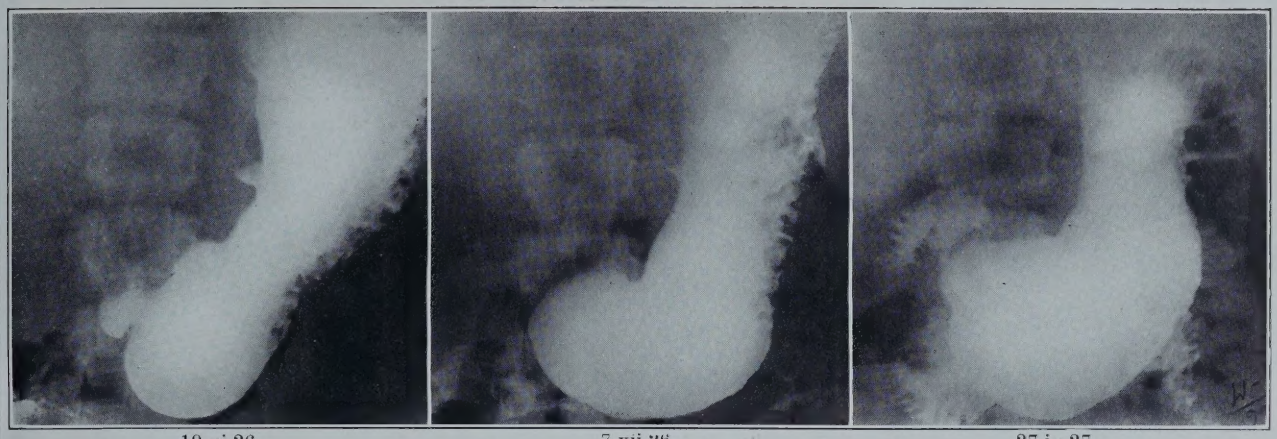
This powder when taken in the doses to be described acts as a mild laxative in the majority of patients. As a rule, there is a movement of the bowels two or three times a day to begin with, and then twice a day or so. It is curious how different patients react in different ways for occasionally the powder causes fairly marked diarrhœa, while again it may sometimes give rise to constipation. On the whole, however, it acts well, but any diarrhœa or constipation that may ensue can be easily corrected by an adjustment of the proportions of magnesia and bismuth. Sometimes when constipation is troublesome we keep on with the above powder and give in addition sufficient doses of "magnesia cream" to relieve the bowel condition. After a few days it is quite easy to adjust the alkali to suit the bowels.

For hospital work the large amounts of bismuth required may be found to be too expensive, and to overcome this we have recently used a cheap powder of the following composition; here the amount of bismuth is much smaller.

Bismuth oxycarbonate	1 part.
Sodium bicarbonate	3 parts.
Magnesium carbonate (powd.)	3 „
Creta preparata	3 „

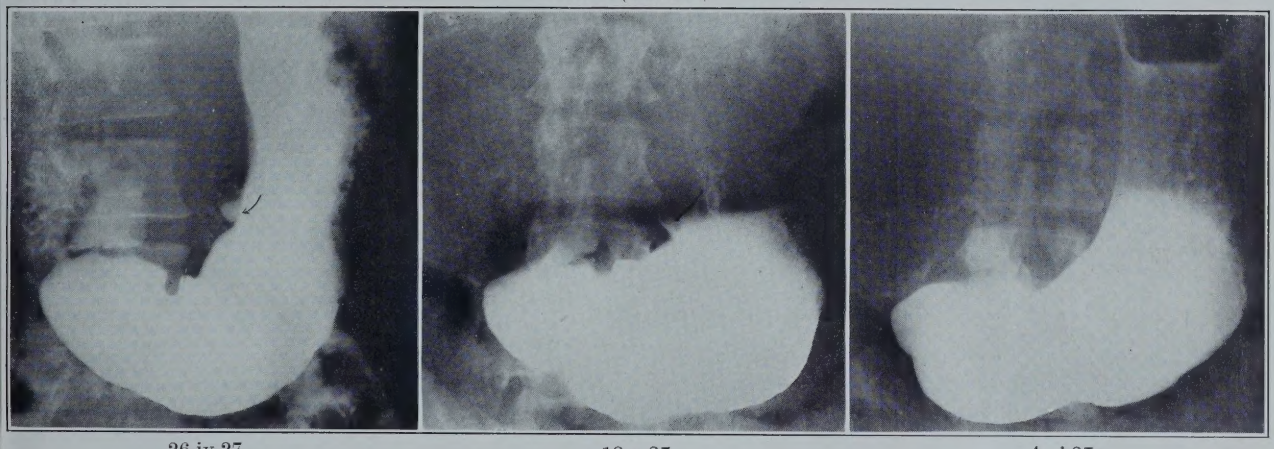
Either of these powders may be used, but if expense is no object perhaps the former is preferable, though there is very little in this. In order that the powder should have its maximum effect, the patient should be fed on liquid diet or so for a week or longer depending on the severity of the condition. When liquid diet combined with alkali is given, the patient quickly loses his symptoms within a day or two, and this is especially true with regard to pain. If, after a few days of treatment the patient still complains of persistent pain, it is probable that the condition is

FIG. 1 (Case A).



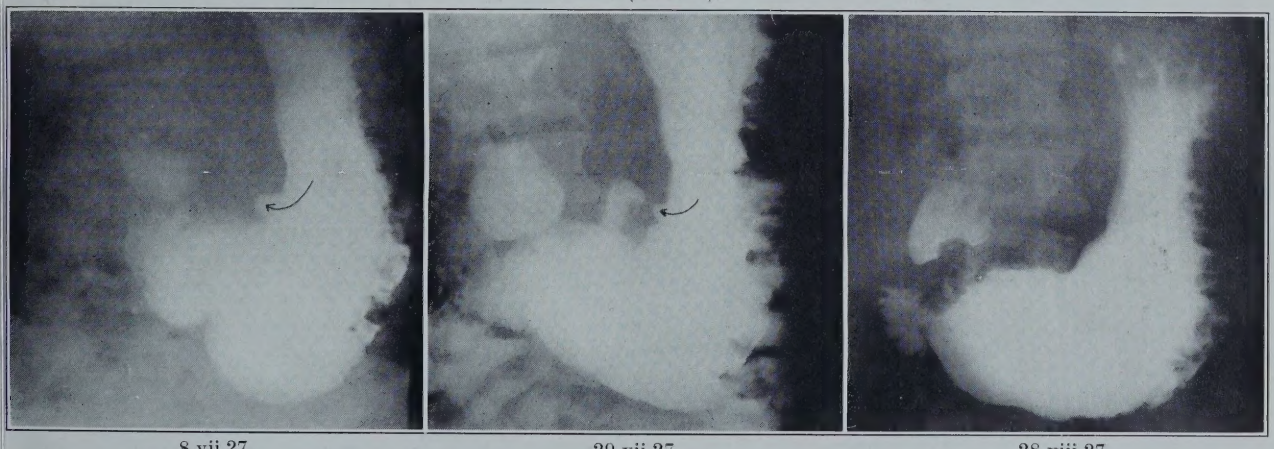
19.xi.26. 7.xii.26. 27.iv.27.

FIG. 2 (Case B).



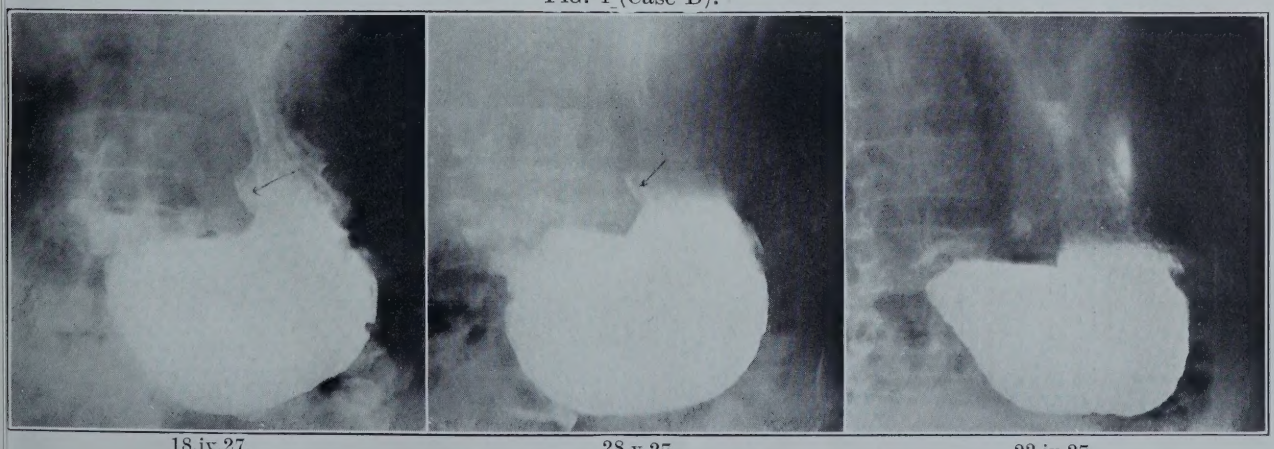
26.iv.27. 13.v.27. 4.vi.27.

FIG. 3 (Case C).



8.vii.27. 29.vii.27. 28.viii.27.

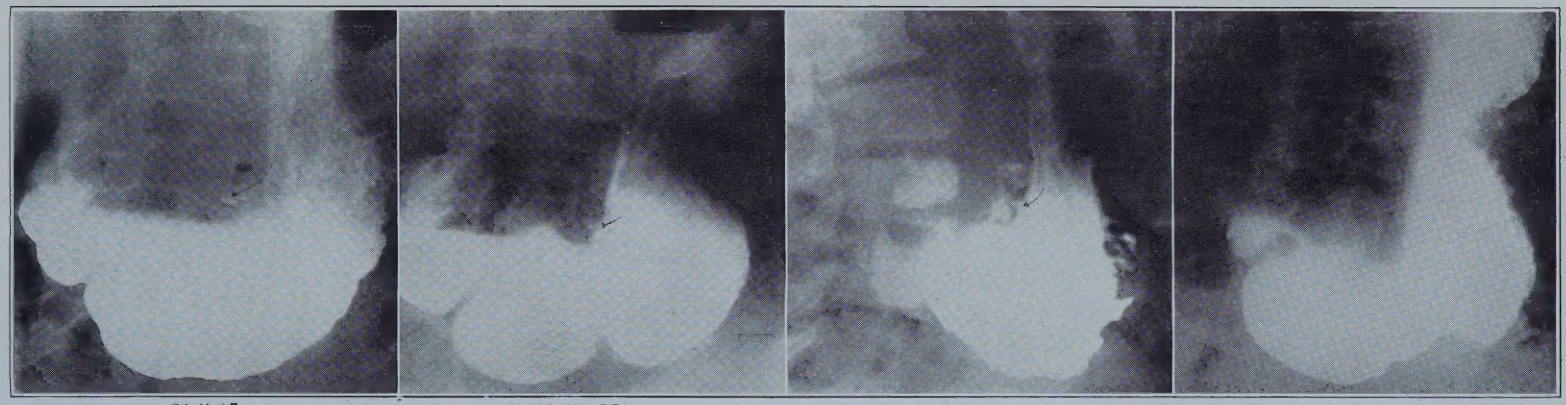
FIG. 4 (Case D).



18.iv.27. 28.v.27. 22.ix.27.

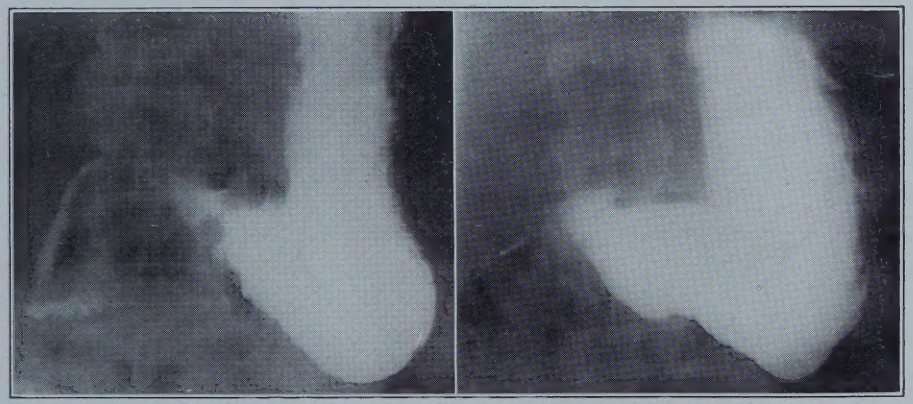
Descriptions of illustrations are incorporated in the notes of the cases.

FIG. 5 (Case E).



21.ii.27. 21.iv.27. 2.vi.27. 30.vi.27.

FIG. 6 (Case F).



28.ix.27. 20.x.27.

FIG. 7 (Case G).

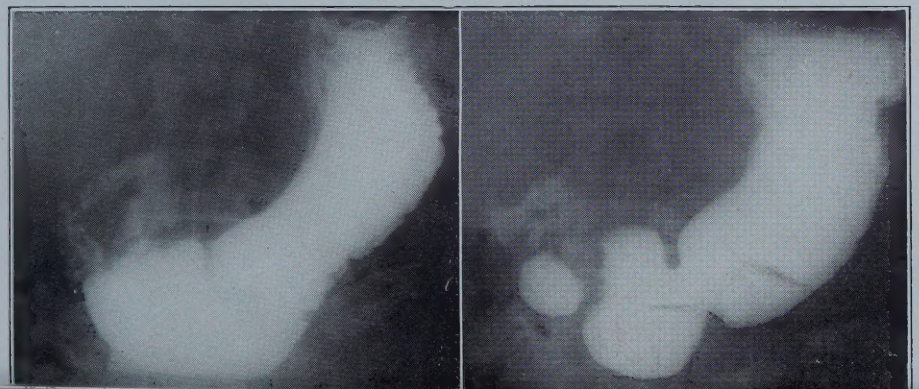
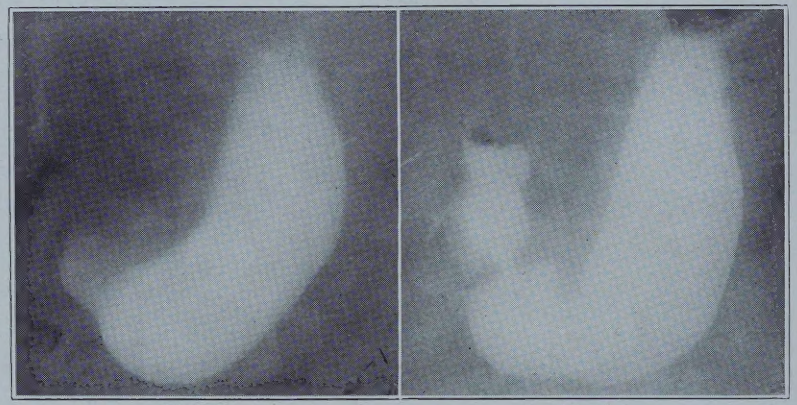
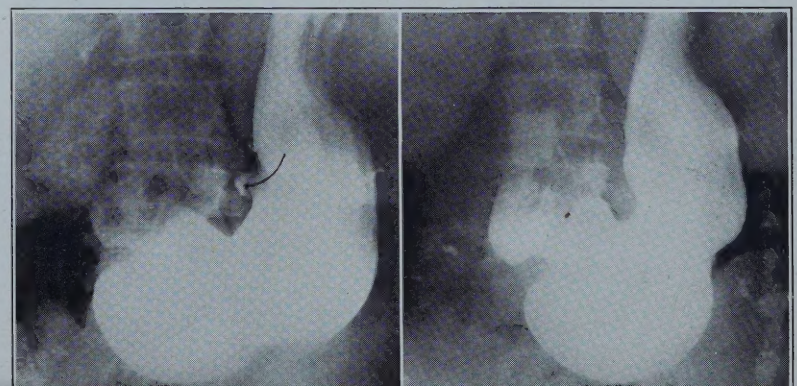


FIG. 8 (Case H).



28.iii.27. 26.v.27.

FIG. 9 (Case I).



not an ulcer, or that adhesions to adjacent organs are present. Indeed, this method of treatment is of great value as a means of diagnosis. The exact details of treatment are not important, but a few simple principles must be kept in mind. The most important point is to give sufficient alkali and to see that alkali is available during the night if required. In order to overcome, as far as possible, the possibility of the stomach becoming acid during the night, the patient receives a double dose of the powder immediately before retiring. One or two doses are also left near to his bed and he is warned that if he should wake up with any discomfort he is to take a dose. It generally happens that if acid is formed during the night this causes sufficient discomfort to wake the patient; if he sleeps peacefully throughout the night there is not much need for more alkali, so that by warning the patient as to the necessity for taking the powder whenever he wakes up, the difficulty of preventing acid accumulation during the night may be overcome. Though it is best for the patient to be in bed during the earlier period of the treatment, this is not always necessary, and whether or not complete rest is insisted on must depend on circumstances. We have cured many patients in the out-patient department. After a few weeks of intensive alkaline treatment the amount of the powder given is reduced until it is gradually left off. Its use should, however, be continued for several months, especially in the case of duodenal ulcers. While the exact details of treatment may have to be varied to suit different patients the following general scheme will be found useful in the majority of cases.

First Week.—Patient is kept on a fluid diet consisting of milk or milk and Benger's food. About 3 pints of milk per day are taken. Eight ounces or so of milk are given every two hours. To prevent coagulation in the stomach 10 grains of sodium citrate are added to each glass of milk. A teaspoonful of one of the alkaline powders described is taken every two hours shortly after the milk. The powder is best taken in a little water or milk, but care must be taken to stir the mixture thoroughly immediately before drinking. The powder is practically tasteless, and might be taken in the milk feed, but patients generally prefer to take the milk first and to take the powder afterwards. About six or seven doses of powder are given per day. In addition to this, a double dose is given last thing at night immediately before retiring to rest, and the patient is warned, as already described, to take some extra powder if he wakes up at night, especially if any discomfort is present. Adjustment of the powder or addition of magnesia cream may have to be made if the bowels are disturbed to an excessive degree.

Second Week.—If the patient is complaining of any discomfort and the symptoms still persist at intervals, the procedure for the first week is kept up for a few days longer. If there are no symptoms the powder is reduced to four or five doses a day, the quantity of milk being somewhat reduced also. Two or three eggs are now added to the milk and beaten up. After this a small amount of toast and butter is taken and the diet gradually increased, so that by the end of the week patient is taking, in addition to his milk, a certain amount of toast, butter, eggs, custards, and cream. A dose of powder immediately before retiring is taken as before, and the same care during the night is still necessary. In fact, it is very important that any discomfort arising at night-time during any period of the treatment should be at once checked by a dose of powder.

Third Week.—Powder reduced to three to four doses per day and one at bedtime. Food now gradually increased and should consist largely of eggs, cream, toast and butter, custards, cereal puddings, a little white fish, and a small amount of potatoes.

Fourth, Fifth, and Sixth Weeks.—Milk is given up or very considerably reduced, and powder reduced to three times per day with a dose at bedtime. Food as before with a little pounded chicken added. In the fifth week a little meat may be taken, but only a very small amount. By this time patient is taking a simple nourishing diet and the ulcer should either be healed or well on its way. All the symptoms should have entirely disappeared.

After-treatment.

The powder should be taken two or three times a day for another six weeks. After this, if all goes well, it may be given up during the day if there is an entire absence of symptoms, but a dose should be taken at bedtime for a long time afterwards. Indeed, many patients take this powder as a laxative and it never does any harm.

One most important point is to warn the patient that if any symptoms return he must go back to milk or light diet for a day or two and take the powder four or five times a day. This cuts short an attack which might otnerwise prove troublesome. Patients who have had ulcers are liable to attacks of dyspepsia when they get run down or after an infection such as influenza, but these attacks do not mean that there is a recurrence of the ulcer. This point we have amply proved by X ray investigation in such cases.

Diet.—The diet should be simple, and above all things the food must be thoroughly masticated. Of course it goes without saying that defective teeth should be attended to. The patient should be warned never to eat too large a meal at one time for this tends to cause a recurrence of symptoms. Salads should be avoided, and all fruit and vegetables should be cooked before eating. The patient should be told not to eat anything that could leave an insoluble residue in the stomach. The cellulæ of raw fruit is not digested by the human organism and does much harm by rubbing against the pyloric orifice. Beef-tea and meat extracts of all kinds should be avoided, also heavy foods such as pastry; nuts are better left alone. Indeed, the rules of diet should be based on obvious common-sense principles.

Smoking and Alcohol.—Excessive smoking is a most frequent cause of gastric symptoms, and, if possible, smoking had better be given up altogether, at least for a time. If this is impossible, the minimum amount should be enforced. In our opinion the profession as a whole hardly realises the excessively detrimental action of tobacco on the deranged stomach. Alcohol should be entirely avoided, for it tends to excite the flow of acid which can only be injurious in patients suffering from gastric ulceration.

Other Measures.—The tendency to secrete excessive acid can to some extent be controlled by giving fats or oils between meals. They are of no value unless given on an empty stomach, but if a patient can take such a substance as olive oil, a dessertspoonful two or three times a day shortly before meals may be useful. Cream acts in a somewhat similar way. Various other well-known measures may be used for the control of hyperacidity, but it is unnecessary to discuss them here. In our hands belladonna has been the most useful drug.

Results of Treatment.

A series of X ray photographs (see plate) show the results of this intensive alkaline treatment. In all cases the ulcers are seen to have disappeared in a comparatively short time. The following short notes of the cases described indicate generally the style of case dealt with.

History of Cases.

CASE A.—A police constable, aged 28, was admitted to hospital on Nov. 19th, 1926, complaining of very severe epigastric pain, which had been present in varying degrees of severity for the past six months. There had been very considerable vomiting, which often relieved the pain, generally coming on about one hour after his meals. Pain was also relieved at times by taking small amounts of food. He had been troubled with "indigestion" for some two to three years. One year before admission he had had his right kidney removed for condition of pyonephrosis, due to an aberrant renal artery. Examination showed a very acute tender zone in the upper part of abdomen in costal angle, with the usual rigidity.

This man stated that he was free from pain within a few days after commencing the diet, and he was discharged on Dec. 14th, 1926.

The X ray findings are shown in Fig. 1. In the first photograph (Nov. 19th) a very large penetrating ulcer was seen on the lesser curvature. A second photograph on Dec. 7th showed that the ulcer was still present, but very much smaller. At this time patient was quite well and had no symptoms, so he did not report again until several months later. On April 27th no evidence of ulcer could then be found by X ray examination, the report being "no ulcer now

visible." Since that time he has enjoyed excellent health, and though taking certain dietetic risks has lost no time at work.

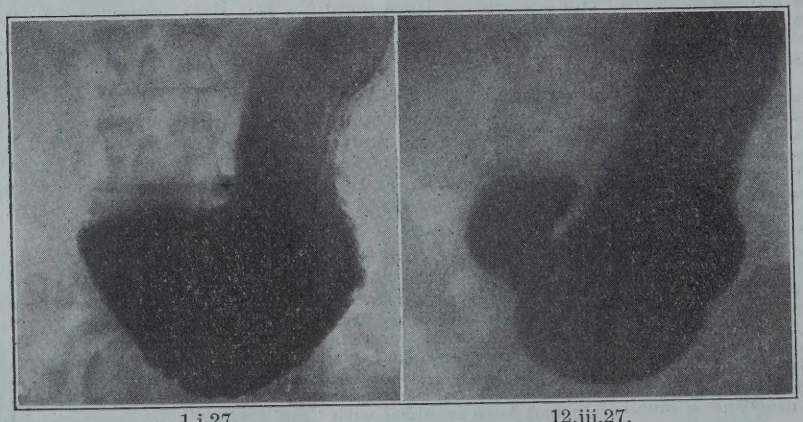
CASE B.—An electrician, aged 38, was admitted on April 27th, 1927, and discharged on June 3rd. He came to hospital with the request that he should be operated upon, as for some six to seven years he had been "a martyr to indigestion," and during the past six months the condition had become so severe that he could not now get relief and could not do his work. He had tried all forms of dietary, but could not control vomiting. He strongly insisted upon operation and resented his being kept in a medical ward, and generally proved a troublesome patient. Symptoms were not allayed for three weeks or so, probably because the patient did not wish to admit that an operation might not prove necessary after all. He then became much more amenable, lost all his symptoms, and in five weeks had put on over a stone in weight.

The radiograms are reproduced in Fig. 2. The first (April 26th) showed a large penetrating ulcer on the lesser curvature which gradually got smaller in size (May 13th) and soon disappeared altogether (June 4th). He is still at work and loses no time, and recent X rays still show negative findings.

CASE C.—The patient, a worker at St. Dunstan's, aged 38, was admitted on July 13th, 1927, and discharged on August 12th. He had lost both eyes during the war through a gunshot wound. For many years had suffered from vague dyspeptic symptoms which had become much more accentuated during the last 12 months or so. Recently had become quite unfitted for his work at St. Dunstan's as the pain was intense. As X ray showed a large gastric ulcer he was admitted for operation to the surgical side. As the man's mental condition was so upset and his general condition so poor he was transferred to the medical side, where alkaline treatment was commenced on July 16th. He was ever impatient and, although symptoms had not completely gone, he preferred to go to his home, where treatment was continued. He has put on a great deal of weight and is free from pain.

The first X ray photograph (Fig. 3) was taken on July 8th and showed a large penetrating ulcer of posterior wall of the lesser curvature. The second photograph, taken on July 29th, showed that the ulcer was much smaller though still

FIG. 10 (Case J).



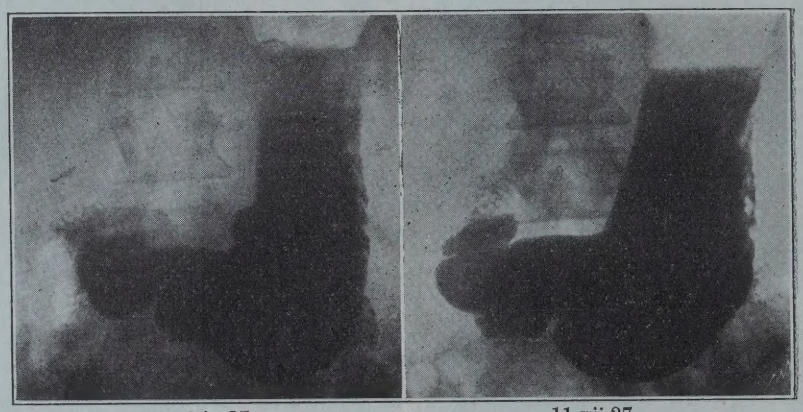
1.i.27. 12.iii.27.

present. On August 28th the X ray report was "no crater now visible." This man is now quite free from gastric symptoms.

CASE D.—A carpenter, aged 45, was admitted on April 8th, 1927, and discharged on the 28th. His symptoms may be summed up by quoting his own statement that he "had suffered from dyspepsia for 12 years or so." He stated that he always had some discomfort in the upper abdomen and at times such discomfort becomes very accentuated. Vomiting had been one of the chief symptoms; it was always worse when the attacks are severe. He had not had any hæmatemesis. Alkaline diet brought relief fairly quickly and the radiographic report changed from "large penetrating lesser curvature ulcer" on April 18th to "small niche in lesser curvature" on May 28th, and "no ulcer now present" on Sept. 22nd. The sequence is seen in Fig. 4. The patient is now quite well.

CASE E.—A railway porter, aged 53, was sent to the out-patient department by his doctor on Feb. 2nd, 1927, with the suggestion that he might be having a slowly leaking gastric ulcer, as the pain had been so very great for some ten days or so. The history went back 20 years, when he was

FIG. 11 (Case K).



9.iv.27. 11.vii.27.

treated by the doctor for "gastric trouble." Since then he had been under the care of doctors on and off, and five years ago condition was labelled a "gastric neurosis." Of late the pain was sometimes so severe that eating and sleeping were almost impossible.

He was a thin, anæmic man, almost cachetic in appearance. His teeth had been extracted many years ago, with the hope of clearing up the condition. Over the right epigastrium there was very acute tenderness on pressure and gross rigidity of both upper recti. The liver dullness was normal and the white blood count was normal. He declined admission to hospital, and his own doctor was advised as to dietary and use of alkalis. He soon got relief and has never looked back; he has put on nearly 3 st. in weight and can do a full 10 hours on duty. His meal-times are very irregular, but he states that he has now no pain or discomfort of any kind.

Here again the X ray findings were very definite, and the photographs (Fig. 5) show that on Feb. 21st there was "a large penetrating ulcer containing gas." On April 21st the report was "crater present, but much reduced in size"; on June 2nd "some irregularity of lesser curvature with small ulcer crater," and on June 30th "now no evidence of gastric ulcer." It is interesting to note that this man was treated quite successfully as an out-patient.

CASE F.—A policeman, aged 45, had had symptoms of indigestion since 1913. He had a gastro-enterostomy in 1917 and gained temporary relief, but most of symptoms returned and gastro-enterostomy opening was enlarged in 1921. No relief was obtained from this and gastro-enterostomy was undone in December, 1922. Again there was temporary improvement, when symptoms returned with unusual severity and accompanied by much loss of weight. Pyloroplasty on July 2nd, 1924, gave very considerable relief, but he still had much abdominal discomfort with nausea, and could not get his weight up to its former level. Gradually he became worse and this year was admitted and put on alkaline treatment. Symptoms within a week were less than they had been for years. He is now quite free from pain, feels fit, and has put on 2 st. in weight. The X ray findings were as follows (see Fig. 6) Sept. 28th, 1927: "Stomach at normal level lying far to left. Whole of antrum is grossly deformed and extremely tender. Emptying is a little slow. The evidence is strongly suggestive of an ulcer in the region of the pylorus and the deforming is probably post-operative." Oct. 20th: "Deformed stomach with apparent fixation of pyloric end. Function normal. No evidence of an ulcer."

CASE G.—A labourer, aged 51, was admitted on July 12th, 1927, and discharged on the 27th. He complained of recurring attacks of dyspepsia for five to six years; for the past eight weeks the symptoms had been much more severe. He was having almost constant pain under the ribs and found that nothing would relieve it. He had evidently tried most remedies. He was obviously suffering a good deal of discomfort in epigastrium, where an area of tenderness could be felt just to right and above umbilicus. There was no blood in stools. The symptoms rapidly disappeared under intensive alkaline treatment and he now makes no complaint.

The radiograms are seen in Fig. 7, the reports being as follows. May 31st, 1927: "Normally placed orthotonic stomach emptying completely in one hour via an extremely deformed cap. Appearance of a duodenal ulcer." July 26th: "Stomach restored to approximately normal function. Duodenal cap shows good outline with only a slight deformity of base."

CASE H.—A police constable, aged 36, was admitted on April 8th, 1927, and discharged on the 25th. He was admitted with a diagnosis of carcinoma of stomach, as symptoms of indigestion associated with loss of weight had been fairly acute. He stated that he had not had a "good stomach" for very many years and any indiscretion in diet would often upset him. On admission he was still well nourished and showed no anæmia. His chief complaint was of a persistent feeling of heaviness in the epigastrium and a complete dislike for food. No tumour could be felt and the stools showed no occult blood. Free HCl was present.

The X ray reports were as follows (see Fig. 8). March 28th, 1927: "Stomach orthotonic and normal in situation with very marked deformity of antrum and a very deformed cap. Emptying time is rather rapid and the appearance is rather suggestive of an early neoplasm." May 26th: "Orthotonic stomach with normal antrum and duodenal cap. Now no evidence of ulcer."

This patient is now quite well.

CASE I.—A married woman, aged 30, was admitted on Oct. 28th, 1927, and discharged on Nov. 19th. She gave a history of very severe upper abdominal pain radiating through to the back. This pain had been present off and on for over three years. In 1925 she was under treatment for some months and again in 1926 for six weeks. During the present year she had never been free from pain and discomfort of some kind. On examination she was well nourished, showing very acute tenderness over the right epigastric region; otherwise nothing gross was detected. From the time she was put on alkaline diet the pain disappeared and she made an uninterrupted recovery. Whereas on Oct. 28th she had a "very large penetrating ulcer of lesser curvature," on Nov. 17th the report was "no ulcer seen and no tenderness" (see Fig. 9). The patient is now in good health and there are no symptoms of dyspepsia. The epigastric tenderness has also disappeared entirely.

CASE J.—The patient was a mechanic, aged 39, and was admitted on Feb. 11th, 1927, being discharged on March 1st. He complained of intermittent attacks of abdominal pain with severe heart-burn and water-brash since 1922. For four months before admission the epigastric pain had been burning and had been accompanied by irregular vomiting after meals. He had lost much sleep on account of the very severe nocturnal pains, which sometimes would keep him awake all the night, and he had lost considerable weight. He was a very spare man, and over the epigastrium (high up) there was almost acute tenderness on pressure with much rigidity. There was definite skin hyperæsthesia. On Jan. 1st radiography showed a large penetrating ulcer midway down the lesser curvature, whilst on March 12th no ulcer was visible (see Fig. 10). He is quite well now and putting on weight.

CASE K.—A cellarman, aged 39, complained of epigastric pain for two years with periods of a certain degree of freedom. The symptoms were accompanied by much vomiting and nausea and he was treated for "gastritis" which was thought to be due to consumption of 3–4 pints of beer a day. Another outstanding symptom was the constant feeling of fullness, associated with much "belching of wind." Incidentally, he was found to have a condition of mitral stenosis with fibrillation. He was put on intensive alkaline treatment with judicious home dietary, with the result that the condition cleared up. He has not since complained of any dyspeptic signs. He was treated throughout in the out-patient department.

Here again the X ray reports showed that a large penetrating ulcer of the lesser curvature had disappeared in about three months (see Fig. 11). The reports on April 9th, 1927, was "appearance of a large penetrating ulcer of lesser curvature, with well-rounded outline." On July 11th it was reported that no ulcer was present.

Some General Considerations.

The use of intensive alkaline treatment often gives good results when all other methods have failed. Generally in post-operative jejunal ulcer the method causes a complete disappearance of the symptoms in a few days. Again, it often happens that patients whose symptoms have not been relieved by operation respond to this treatment. Its use in hæmatemesis is also important, though space forbids the discussion of this aspect at present.

We are firmly convinced that in intensive alkaline treatment we have a simple successful method for dealing with gastric ulceration, and that by its intelligent use practically all uncomplicated ulcers can be cured in a comparatively short time with little or no discomfort or inconvenience to the patient.

THE DIAGNOSIS OF A LIMP,

WITH SPECIAL REFERENCE TO THE HIP-JOINT.*

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THE diagnosis of the cause of a limp, though often simple enough, is sometimes very difficult. Amongst the causes of a limp are an enormous variety of interesting conditions which may affect any and every tissue and joint not only of the leg, but also of the sacro-iliac and lumbar regions. Some of these conditions are associated with pathological changes which have only been recognised in recent years, and of which the ætiology is still obscure. Even an excellent radiogram may not put an end to the difficulties, yet an early and correct diagnosis may be of supreme importance to the patient. This paper surveys the subject and discusses the affections of the hip-joint in some detail.

Young patients present the greatest difficulties in diagnosis. Their limps vary considerably from time to time and may be intermittent; many children with definite pathological conditions of the hip-joint, for instance, limp only when tired. It is unfortunate that they rarely display their normal gait in the consulting-room. Many curious gaits are met with in children; some of them are hereditary and no adequate cause can be found for them, but these do not, as a rule, deserve the term "limp." Much, however, can often be learned from a patient who limps by watching him walk; a shrewd diagnostic guess is often proved correct by subsequent careful routine examination. The spastic limp of a child with hemiplegia is an example. A thorough routine examination of all the joints of the lower limbs should invariably be made in all children with a limp or a rolling or waddling gait, even though the cause seems obvious. One possible source of error is rickets. A young child, perhaps, is taken to a doctor because he is late in walking, and the doctor quite correctly diagnoses advanced rickets. When the child gradually learns to get on his feet his gait is unsteady and waddling. This is attributed by the doctor to the rickets; but that child has bilateral congenital dislocation of the hips, which may be recognised by another practitioner later, possibly after all signs of rickets have disappeared. Such a mistake, not serious but annoying, might have been avoided by insisting on a routine examination at the first visit, or by a wise repetition of such an examination at a subsequent interview.

A Classification of Limps.

Limps proper can be classified into groups, and I suggest the following as simple and sufficient: (1) the short leg limp; (2) the painful limp;

* A paper read at a meeting of the Norfolk and Norwich Medico-Chirurgical Society.

(3) the stiff limp; (4) the weak leg limp; (5) the hysterical or functional limp. Two or more of these types are often combined.

With a *short leg* the patient either "goes down" on the affected side or walks with the opposite knee bent, rising on that leg at every other step without any rolling of the trunk.

In a *painful limp* it is obvious that the patient is endeavouring to put as little weight as possible on the limb and to relieve it as quickly as possible. He hurries off the bad leg on to the good one, while he may also walk on the toes in order to avoid jarring the tender joint.

In the *stiff limp* one or more joints of the leg fail to move normally, and often there is a certain amount of deformity. Fraser [1] places the short legs with the deformed legs and classifies the limp due to these conditions as "mechanical."

The *weak leg limp* varies considerably according to the extent of the limb affected. The weak leg is usually also a short one. The various types are most commonly seen amongst sufferers from poliomyelitis. In a grossly paralytic leg the limb is flung forward in a loose disjointed manner. If there is foot-drop the knee is often raised abnormally high, so that the toes may clear the ground. If the quadriceps is weak or paralysed the patient may only be able to walk if one hand is placed on the front of the thigh. Lastly, there is the lurching or rolling gait associated with difficulty in sustaining the pelvis on the femur. As the weight is borne on the weak leg the shoulders, and with them the centre of gravity of the body, are thrown towards that side. This is well seen in infantile paralysis, when the glutei are affected, but is present in all conditions which seriously disturb the mechanism of the hip-joint and the action of the glutei muscles.

The *functional or hysterical limp* may simulate any of the above, but tends to suggest a combination of the painful and the stiff types. The three characteristics of this type of limp are exaggeration, variability, and the entire absence of any clinical or radiographic signs of disease. The limp is apt to be grotesque in its exaggeration, particularly if the patient is aware that the doctor's eye is upon her. The gait of hip disease may be imitated. If the foot is held in a deformed position it is almost invariably in the direction of varus. An X ray should always be taken of the joint which is apparently affected. A second or even third examination may be necessary, and is, in fact, advisable, before a definite decision. If the diagnosis of hysteria is correct this will usually be confirmed by the rapid disappearance of the symptoms under treatment, which should always be given in a hospital or institution and should include daily instruction in correct walking.

Differential Diagnosis among the First Four Groups.

Shortening to the extent of half an inch or even more may be present in a child without a limp, and in an adult one inch may be completely hidden. By walking on the toes of the short limb even a greater degree may be masked. If shortening from malunion of fractures of the thigh or leg can be excluded, the child with the short leg is examined as follows. As the child lies on the couch any difference in the size of the two legs is noted and the levels of the great trochanters are compared. If the great trochanter is raised the hip is at fault and will require thorough examination. If the trochanters are level the case is either one of congenital short leg or of infantile paralysis. The poliomyelitic leg may show gross wasting, probably actual paralysis of one or more muscles, and a cold ill-nourished limb, with a knee-jerk either absent or only obtained with difficulty. Sometimes a congenital short limb is smaller than its fellow, and then it may be extremely difficult, or even impossible, to decide between congenital short leg and a mild paralysis.

In the most common congenital type the leg is short and a trifle smaller in girth and nothing more. The shortening may, however, be due to a developmental error in the femur which may even amount to almost complete suppression or may be associated with the presence of masses of cartilage in the ends of the diaphyses, a condition called dyschondroplasia, or Ollier's disease. This usually affects, for the most part at any rate, one side of the body, the arm and leg on the same side being short. It is wise, therefore, to have radiograms of the hip and knee taken in every congenital case to exclude this condition. The arm on the same side in a simple case may be short, however, without any gross changes in the bones. The finding of asymmetry without paralysis in the arms, therefore, may be a useful point in deciding the cause of a shortened leg.

Painful Limp.—The number of conditions which can give rise to a painful limp is legion; they vary from a blister on the heel to spinal caries or sacro-iliac disease. Careful inspection of the gait and history, and the patient's information as to the seat of the pain, supplemented by a careful routine examination, will usually give a correct diagnosis. Supposing, for instance, a child complains of pain in the foot, limps, and is found to have a flattened arch. It is uncommon for a child with uncomplicated flat-foot to complain of pain, though it occasionally happens. Careful inquiry should be made as to the seat of the pain, tenderness should be sought, and X ray films taken. While the condition seen in adolescents usually called Schlatter-Osgood disease of the tibial tubercle, or Schlatter's knee, is well known, it is not generally recognised that a similar chronic painful condition (osteochondritis) may affect the epiphysis of the heel and the tubercle of the navicular bone, points at which, in common with the tibial tubercle, strong tendons are attached. Again in young children, particularly, in my experience, those about the age of 5, a painful and tender swelling occasionally centres on the navicular bone, and raises a suspicion of tuberculosis. A radiogram demonstrates that curious condition called Köhler's disease, where the navicular is represented by a centre which is shrunken and denser than normal. If a series of radiograms be taken this centre is seen in the course of a year or more gradually to assume its normal appearance. X ray examination is essential in all cases where a child complains of pain in one or both feet, whether these are flat or not. Another pathological condition of the foot affects older adolescents and young adults —viz., a spontaneous fracture of one or even two of the metatarsals, the so-called "marching fracture" of the war. Without obvious trauma the patient begins to limp and complains of pain in the foot. A tender thickening is felt in the line of one of the metatarsals, usually the second or third, and a radiogram shows a fusiform thickening of the bone, with or without a definite crack across the shaft.

Other causes of limp are strained or ruptured calf muscles, traumatic affections of the knee-joint associated with slipping of the patella, displacement of a semilunar cartilage, or damage to the articular cartilage (a lesion not so rare as might be supposed), and arthritis of the knee and ankle, which in most young cases will be of tuberculous origin.

There are two main affections of the sacro-iliac joint, the tuberculous and the non-tuberculous. The latter may be a simple strain associated with trauma, pregnancy, or parturition, or the radiogram may reveal definite osteo-arthritic changes in the joint. The limp is a typical painful limp. The lumbar spine is usually tilted towards the opposite side, as if with the object of deflecting the body-weight from the painful joint. There is tenderness over the back of the joint, and pain is referred to it on forced hyperextension of the hip-joint, and on flexion with the knee fully extended; both these movements put a strain on the joint. In tuberculous cases there may be a cold abscess in the buttock, while the radiogram is usually conclusive. In spinal caries of the dorsi-lumbar and lumbar regions there may be spasm or abscess of the psoas, causing fixed flexion of the hip-joint and a limp. When extension of the hip is the only movement of this joint that is impossible, the spine should be examined for stiffness and other signs of caries.

Stiff Leg.—There are two main types of stiff leg limp. In one the whole leg is stiff from a spastic paralysis, and in the other only one joint is restricted in movement. The spastic gait is so common in children that it is hardly necessary to recall the typical jerky limp of a hemiplegic, with the heel well off the

[1] J. Fraser: Brit. Med. Jour., 1921, i., 843.

ground, the whole limb often internally rotated and adducted at the hip, and none of the joints normally flexed or extended as the patient attempts to walk. On examination the hypertonus of all or some of the muscles of the leg, the exaggerated knee-jerk and the extensor plantar response confirm suspicion of an upper segment lesion. In the milder cases, when the leg is often short, help in diagnosis may be given by the condition of the arm on the same side. Even a slight awkwardness in the method of carrying the forearm and hand will be sufficient to determine a hemiplegia. In the second group are included all the affections of the various joints of the leg, traumatic and inflammatory, as well as affections of the muscles, tendon sheaths, &c., which give rise to any stiffness and limitation of motion. Careful inspection of the gait followed by a routine examination, beginning at the toes and carried up to the hip, will usually locate the lesion. The degree and direction of the position in which the hip is fixed are of the greatest importance in determining the severity of the limp, and this is true of the other joints. A hip-joint which is more or less fixed in a slightly abducted and flexed position, but is free from pain, may cause little or no limp in a patient who has learnt to mask his trouble. Nothing, however, can hide the laboured gait of a patient whose hip has become adducted with quite unnecessary apparent shortening. He tires readily and complains of pain in the overworked lumbar muscles and joints in addition to pain about the hip itself. As in all the joints of the leg, it is not so much the limitation of movements per se, even if this amounts to complete fixation, that produces the limping gait and disability, as the undesirable position in which the joint is fixed or the pain which is caused by weight-bearing.

Weak Leg.—For normal gait a certain amount of strong reliable voluntary abduction of the hip-joint is necessary. Anything which interferes with the proper support of the pelvis on one femur as the other foot is raised from the ground will necessitate some abnormal casting over of the centre of gravity of the body towards the affected side at every other stride. For normal gait the hip-joint must supply a stable fulcrum round which the glutei can act; these muscles must be strong enough for their work and not abnormally shortened, and they must have a reasonably good leverage ensured by an approximately normal relation of the trochanter to the head of the femur. In most of the pathological conditions affecting the hip-joint two or more of these desiderata are wanting. For instance, in congenital or pathological dislocation the fulcrum is more or less unstable and displaced upwards towards the origin of the glutei; the leverage is thereby diminished, while the muscles are shortened by the elevation of the trochanter. In the migrated arthritic hip the fulcrum and trochanter are elevated and the lever shortened by erosion of the head and neck of the femur. In a fractured femoral neck the lever is shortened and the trochanter elevated. In infantile paralysis the fulcrum and lever are usually unaffected, but the power of the glutei is diminished or lost.

Differentiation of Limps Due to Affections of the Hip.

A limp is not usually the result of any one factor such as pain, stiffness, or shortening, but of a combination of two or more. Hence it is impossible to classify the affections of the hip-joint strictly under the groups already mentioned. In no joint is the medical man better repaid by systematic examination.

Painless Short Leg with the Trochanter Raised.—There are three possible diagnoses: congenital dislocation, coxa vara, and pathological dislocation (see Table A).

In congenital dislocation the limp has existed since the child began to walk; the patient with coxa vara may give the same history or the limp may have supervened later. In pathological dislocation there has been an illness, perhaps in infancy, with abscess formation and operation and a scar or scars will be found in the region of the hip; this will decide the diagnosis. As a rule the head has been eroded or entirely destroyed and cannot be felt above its normal limit, while the scarring in the region of the joint obscures the emptiness of the acetabulum. In both congenital dislocation and coxa vara abduction is the limited movement; limitation is marked in coxa vara, but is only occasionally a prominent feature of congenital dislocation. In congenital hips the other movements are free, even too free, while in coxa vara internal rotation and sometimes extension are limited. The limitation of movement is usually insufficient to affect the gait; the limp is the result of shortness and weakness. Lordosis is only marked in bilateral cases of congenital dislocation; in coxa vara it is not usually present, except in those severe bilateral cases, the so-called cervical or infantile coxa vara. These closely resemble a double congenital dislocation, particularly in their gait, but are commonly associated with a good deal of pain and disability. The final diagnosis between these two conditions depends upon the position of the head of the femur as determined by manual examination. If it is in the acetabulum, coxa vara must be present. If, on the other hand, the fingers can be abnormally depressed over the front of the joint a dislocation is present. This must be confirmed by feeling the head in the position in which it invariably lies when the dislocation is congenital, namely, in front of the trochanter (not behind, as in traumatic dislocation) and somewhere between this prominence and the anterior superior spine. It can be made more obvious by rolling out the femur. The diagnosis is usually quite simple if only the examination is made in a routine manner. Other interesting but not diagnostic signs include asymmetry of the grooves on the inner side of the thigh in unilateral congenital hips, especially in the younger fat children. Trendelenburg's sign is not diagnostic of congenital hips.

The patient, stripped, stands with her back to the examiner and is told to lift first one foot and then the other from the ground. The position and movements of the gluteal folds are watched. When she stands on the normal leg, raising the other off the ground, the gluteal fold on this side rises slightly with the limb in the normal manner. When, however, she stands on the affected limb the gluteal fold on the sound side falls instead of rising. This is because the glutei on the affected side are unable properly to support the pelvis.

This indicates nothing more than a defect in the osseo-muscular mechanism between the pelvis and the femur. It is present in poliomyelitis when the glutei are affected, in ununited fracture of the femoral neck, in pathological dislocation, and the severer degrees of coxa vara, as well as in congenital dislocations.

TABLE A.—*Affections of Hip in Children or Adolescents.*

Short Leg.—Trochanter raised, long history, no pain, no trauma.
- Cong. dislocation.
- Coxa vara.
- Pathological dislocation.

Painful Hip.—No shortening:—
- (*a*) Recent trauma.
  - Strain of muscle.
  - Traumatic synovitis and arthritis.
  - Acute arthritis.
- (*b*) Remote trauma (or indefinite).
  - (i.) Arthritis present.
    - Tuberculous arthritis.
    - Infective arthritis {Subacute, Chronic.
    - Pseudo-coxalgia.
  - (ii.) No arthritis.
    - Pseudo-coxalgia.
    - Pre-arthritic tubercle.

Shortening. Trochanter raised:—
- (*a*) Recent trauma.
  - Adolescent coxa vara (slipped epiphysis).
  - Fracture of neck.
- (*b*) Remote trauma
  - Adolescent coxa vara.
  - Tuberculous arthritis.

Limp of Uncertain Nature.—Gradual onset, no shortening, no pain. Pseudo-coxalgia.

The Painful Hip.

The first group of cases gives a history of trauma followed by a painful limp, but there is no shortening and no raising of the trochanter.

The possible diagnoses are: (1) strain of a muscle in the region of the joint; (2) traumatic synovitis or arthritis; (3) pseudo-coxalgia; (4) pre-arthritic stage of tuberculosis; (5) tuberculous arthritis; (6) infective arthritis. The hip-joint may be affected by synovitis or mild arthritis after trauma like any other joint.

Pseudo-coxalgia and Pre-arthritic Tuberculous Hip.

Pseudo-coxalgia is only gradually becoming recognised as an entity. These cases used to be lost among the tuberculous hips, but they were observed to recover as true hip disease never does. The affection may be bilateral, but is usually unilateral. A child, more often a boy, of anything from 3 to 10 but usually from 5 to 9 years of age, is brought with a history of some irregularity; this is probably secondary to the alteration in shape of the head.

These changes, destructive and reconstructive, take some two or three years to run their combined course. The ætiology is obscure. Trauma is common and is regarded as causative by some authorities; it has been seen a few times after a traumatic dislocation, a very rare accident in a child, and many times after reduction of a congenital dislocation. My own figures show that pseudo-coxalgia developed in 4 per cent. of the hips reduced. On the whole the evidence is in favour of a mild infection as the cause. While marked limitation of abduction associated with free flexion is typical and, in a healthy looking child, strongly suggestive of pseudo-coxalgia, spasm of all the muscles around the hip may supervene for a period at any time during the course of the disease. This spasm, which fixes the joint, naturally suggests tuberculous arthritis as a possible diagnosis until the X ray examination decides the matter.

TABLE B.—*Diagnostic Table (Hips).*

—	Trauma.	Sex.	Limp.	Pain.	Short.	Age.	Limitation of movement.	Tro-chanter.	General condition.
Adolescent coxa vara.	Definite (repeated).	M.	+	+	+	12–16	Abduction, internal rotation or all.	Raised.	Healthy.
Pseudo-coxalgia.	Often.	M.	+	May be.	Slight.	5–10	Do.	Nil.	Healthy.
Pre-arthritic tuberculosis.	Sometimes.	?	+	+	–	Any age, often young.	Abduction, internal rotation.	Nil.	Tuberculous.
Tuberculous arthritis.	Sometimes.	?	+	+	–	Any age, often young.	All.	Nil.	Tuberculous.

a limp of some months' duration. There may or may not be pain in the region of the hip. The patient is a healthy looking, active child and does not appear tuberculous. The legs are the same length, or, if unequal, the shortening is perhaps half an inch at the most. Abduction of the hip is markedly limited while flexion is surprisingly free. Internal rotation also is generally limited to some extent.

Palpation of the joint may suggest some thickening of the trochanter and neck of the femur, but this is not as a rule definite. The X ray is characteristic and usually diagnostic. Tuberculosis may, very rarely, give rise to a radiogram rather suggestive of pseudo-coxalgia, and if there is any doubt the case should be treated as tuberculous by complete immobilisation until the diagnosis is certain. The changes seen by X ray examination vary with the stage of the disease. The earliest is a slight flattening of the convex centre of the head of the femur, but there is no diminution in the width of the joint space; in fact, flattening of the head may make it appear wider than that on the other side. This is in strong contrast to the diminished joint space in tuberculous cases. Later the head is more flattened, oblong in shape, and abnormally dense. Clear areas next appear, so that the density is very irregular. These areas of rarefaction in the epiphysis increase till the head is broken up into fragments (the stage of fragmentation), while the row of fragments extends horizontally, especially outwards, beyond the normal limits of the head. Improvement then takes place; lime-salts are deposited where they had been removed and the fragments blend so that eventually the head is re-formed. Complete restoration is unfortunately very rare. As a rule the head, though convex again on its upper surface and of normal density, is shallower and more spread out than it should be. It remains, in fact, more or less capped or mushroomed. Shortening develops in the later stages only and never amounts to much. The neck is thickened throughout the course of the disease, and occasionally in a fairly early stage one or more clear areas are seen in it, close to the epiphyseal line. These might at first glance suggest tuberculous foci, but they are clearly outlined by a layer of dense bone, which is only seen in tubercle when healing is well advanced, and then the rest of the X ray picture would be conclusive. The acetabulum usually shows

Pre-arthritic tubercle is a deposition of tubercle, either in the juxta-epiphyseal region of the neck of the femur or beneath the cartilage lining the acetabulum. The deposit is at first extra-articular, but later it reaches the joint cavity and sets up tuberculous arthritis. So long as the disease remains extra-articular abduction, which involves increased intra-articular pressure, is limited; while flexion, which can be accomplished with little or no increase of pressure between the bones, remains comparatively free. Infective arthritis may be acute and suppurative, or chronic and non-suppurative.

If the history of trauma is quite recent the case may be one of strained muscle or synovitis of the joint. With a strain the limitation only affects movement in one direction, while in synovitis all movements are affected, though not necessarily to the same extent. In both cases recovery, after a few days in bed without immobilisation or extension, will confirm the diagnosis. A radiogram should be taken to exclude bony injury and antecedent tubercle which has been aggravated by the trauma. Tubercle does not immediately follow trauma, but takes some weeks or months to give rise to symptoms. Acute arthritis may follow a fall; in fact, in many cases the parents recall some recent trauma to account for the trouble. The severity of the pain and the marked muscular spasm, limiting or entirely preventing movement in all directions, makes the diagnosis of arthritis easy, while fever and leucocytosis place the pyogenic nature of the infection beyond doubt. The difficulty in many cases is to decide whether there is an acute arthritis or an osteomyelitis of the upper end of the femur, or both.

If the trauma is not recent the presence or absence of arthritis must be settled. In arthritis all movements are limited, though not necessarily to an equal extent, and attempts at movement are painful; the joint may be completely fixed by spasm in the position of flexion, abduction, and external rotation. Signs such as tenderness, pain on jarring the hip, wasting, &c., are present in both tuberculous and low-grade pyogenic infections. The appearance of the child and the family history may be helpful, but a radiogram is essential. If there is slight diminution of the joint space and irregularity in the outline of the head, even though this may amount to no more than

a suspicion of fluffiness, the case is almost certainly tuberculous. If the hip appears normal the trouble is probably a subacute or chronic infective arthritis, and the child should be kept in bed with an extension on the leg and a fresh X ray examination made after three or four weeks. If the film is still normal the treatment must be decided by clinical examination. If the movements are not entirely free the treatment must be continued for another month, when a third radiogram is taken. Cases of arthritis in which repeated X ray examinations are negative are not by any means uncommon; they often clear up in a month, but some take longer. The throat, teeth, &c., should be examined. Tonsillectomy may provide a diagnosis as well as a cure. A negative von Pirquet reaction may help.

The age of the patient, his healthy robust condition, and the radiogram distinguish pseudo-coxalgia from tubercle. Daw,[2] of Leeds, has drawn attention to the fact that in pseudo-coxalgia the X ray developments are nearly always in advance of the clinical symptoms, whereas the reverse is true in tuberculosis. A doubtful case of arthritis may, very rarely, develop arthritis of other joints and eventually show all the signs of rheumatoid arthritis or Still's disease. Abduction is the movement chiefly affected in pseudo-coxalgia and pre-arthritic tubercle, while flexion remains surprisingly free. Rotation, particularly internal, is commonly limited in both. Absence of pain is a distinct point in favour of pseudo-coxalgia. The more the pain the greater the probability of tubercle. The robust active boy suffering from pseudo-coxalgia presents a marked contrast to the unhealthy, fragile, tuberculous-looking child, and it is not very common to see a child in the pre-arthritic stage of hip disease. The final decision must rest on the X ray findings, which are usually conclusive.

Slipped Epiphysis and Fracture of the Neck.

The second group comprises painful limps following trauma and accompanied by shortening and elevation of the trochanter. If the trauma is recent the diagnosis lies between adolescent coxa vara (slipped epiphysis) and fracture of the neck of the bone. The latter is very rare in young children and rare in adolescents, and it is excessively unlikely that the impaction will be so firm that walking is possible. X rays decide the matter. The importance of this group of cases lies in the ease with which an early stage of coxa vara may be missed, with disastrous consequences. Partial or complete separation of the capital epiphysis usually occurs in young adolescents, particularly boys. A fall in the football field, perhaps, causes the lad more discomfort than was expected, though he continues the game. Only after a few days of painful limping does he report sick. The degree of limitation of movement varies according to the degree of displacement, but even in the slight cases abduction is often markedly limited. Careful measurement reveals perhaps less than a quarter of an inch of shortening, which might easily be due to natural asymmetry, and might even be overlooked. An X ray picture will show the epiphyseal line on the affected side clearer and wider than that of the other femur. The head looks as if its attachment to the neck were loosened, and this is, in fact, true. Careful comparison between the two sides shows that the head of the affected femur lies at a slightly lower level in relation to the neck, perhaps no more than an eighth of an inch. Normally the head of the adolescent femur appears to project above the neck, while below it does not reach the lowest limit. Unfortunately, these signs of commencing displacement of the head are often overlooked. If the case be unrecognised and the boy allowed to walk the symptoms may disappear, only to reappear in an aggravated form after another fall; from this he may recover, but more slowly, and remain free from trouble till a third fall causes a gross displacement of the head of the femur. On the other hand, the lad may continue to limp about for weeks or even months, with a gradually increasing amount of discomfort. An X ray photograph then shows that the epiphyseal line has been yielding all the time and that the head is markedly displaced from its normal position on the neck.

The second type of case in this group has a history commencing with trauma, but extending over weeks or months, and associated with a painful limp and shortening. Here the diagnosis lies between tubercle and adolescent coxa vara, and only too often the latter is mistaken for the former. There should, however, be no difficulty, even without the assistance of the X rays, which must confirm the diagnosis. The error arises from the fact that when the head of the femur is slipping—even the trauma of walking may be sufficient to increase the displacement—or when the head has been recently shifted to a further degree by a fall, there is set up a spasm of the muscles around the joint, which is absolutely fixed (traumatic arthritis). But the position of the limb is very different in the two affections. In hip disease the thigh is flexed and slightly abducted and externally rotated. In adolescent coxa vara the thigh is not flexed, but lies flat on the couch and is markedly rotated outwards. It is not abducted and may even be adducted. The shortening is considerable in coxa vara and far greater than it would be with tubercle in the time during which the symptoms have been present. In coxa vara the undue prominence of the trochanter is obvious, the patient's age is between 12 and 17, and there is nothing about his general appearance to suggest tubercle.

Pseudo-coxalgia during a period of spasm is the only other possible diagnosis, but here the shortening is slight—not more than half an inch after many months, with or without treatment—and considering the age at which this affection occurs it cannot be confused with adolescent coxa vara. The absence of pain would be strongly in favour of pseudo-coxalgia, and a radiogram will decide. The importance of age in the differential diagnosis of the various hip affections was aptly defined by Mr. Harry Platt during a discussion on coxitis last year. He said:—

> Broadly speaking, a persistent hip lesion in a child under 5 is likely to be tuberculous arthritis; between the ages of 5 and 10 pseudo-coxalgia is at least as common as tuberculous arthritis, while in the second decade tuberculous hip disease becomes a comparatively rare lesion, the characteristic affection at this age-period being traumatic coxa vara (i.e., adolescent coxa vara); at all ages a transitory arthritis due presumably to trauma or infection might be seen.[3]

Finally, we have the group with a long history of an indefinite limp which came on gradually without shortening or pain. Trauma may or may not be mentioned. If the child is of suitable age the diagnosis is in all probability pseudo-coxalgia. No attempt has been made here to deal with all the affections, traumatic, infective, and neoplastic, to which the hip is prone.

[2] S. W. Daw: Brit. Med. Jour., 1926, ii., 831.

[3] H. Platt: Brit. Med. Jour., 1926, ii., 832.

PROCEEDS OF A HOSPITAL BALL.—The ball which took place at Covent Garden Theatre recently in aid of the Infants Hospital, Westminster, produced £5000, which has just been paid over.

THE LATE DR. J. G. MCCANDLISH.—The death took place on Dec. 7th, at Blackpool, at the age of 59, of Dr. John Gordon McCandlish, while he was on a holiday at Leeds. Born at Leeds in 1868 he was educated at the Leeds Grammar School, at the Yorkshire College, and at Edinburgh. After qualifying as L.R.C.P. Edin. in 1890 he became house surgeon at the Leeds General Infirmary, and in the following year started practice for himself in the town. He was for a time a member of the Leeds Board of Guardians and a member of the city council. In 1905, owing to the state of his health, he withdrew altogether from public work in Leeds, and went to live in retirement at Blackpool. He leaves a widow, one son, and two daughters.

ON A PARASITIC FŒTUS.

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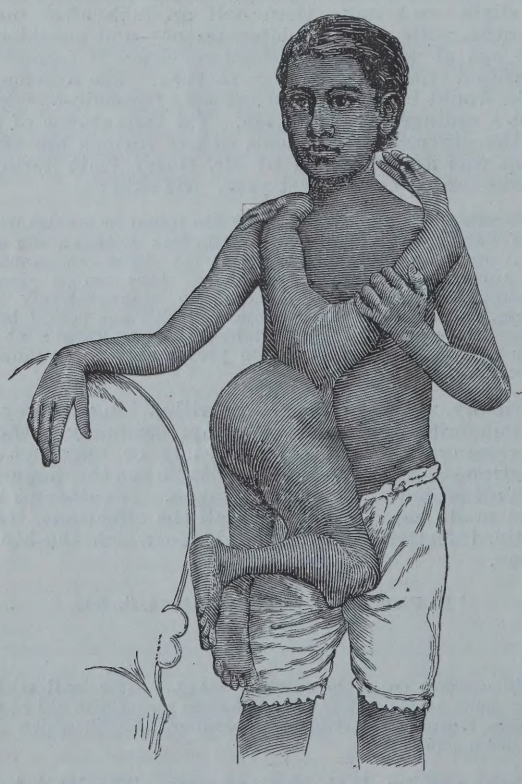
A FEW months ago Capt. D. D. Kapur, M.B., B.S., of Gujarkhana, Rawalpindi, at the suggestion of Capt. S. N. Hayes, I.M.S., sent me an account of a parasitic fœtus which he had successfully removed from a native boy aged 26 days. I advised him to supply notes of the case to the *Indian Medical Gazette*, and when they were published to send me a copy and I would endeavour to bring the facts under the notice of British surgeons. This advice he followed.

A male child, Karamat Hussain, was born Jan. 27th, 1927, in a village near Gujarkhana; attached to the boy was a parasitic fœtus, which in conformation, position, and mode of attachment to the autosite, was the counterpart of the Hindu lad Laloo, which the late S. G. Shattock and I described to the Pathological Society, London, in 1888 (Fig. 1).

In Kapur's case the parasite consisted of chest and abdomen, upper and lower limbs. Each hand had two thick fingers and each foot five toes. The chest was without heart or lungs. It had complete male reproductive organs and the scrotum contained two testicles. The anus was indicated by a dimple. "The parasite,

FIG. 1.



Laloo, a Hindu lad, with his parasitic brother. ("Tumours.")

which had feelings for cold and heat and pin-pricks," was joined to the autosite at the lower part of the sternum and upper part of the abdominal wall. The parasite voided urine independently of his brother, and usually over him, causing much discomfort day and night. A month after birth the parasite was growing rapidly, "and the parents were afraid that the life of the child would become very troublesome." On this account they sought the aid of surgery.

An incision was made around the pedicle joining the parasite to its brother. The abdominal cavity of each freely communicated. The intestines of the parasite had a separate mesentery which adhered to

FIG. 2.

James Poro (born at Genoa, 1686).

the posterior wall of the abdomen. The intestines were thin and had a narrow lumen. Below they joined the lower part of the intestine of the autosite. Large blood-vessels and nerves passed from the autosite to the lower limbs of the parasite; the vessels were ligatured and cut short. There was one kidney in the parasite. The whole intestine of the parasite and the mesentery were transferred into the abdominal cavity of the autosite. The incision was closed in the usual way. The autosite weighed 7 lb., the parasite 1 lb. The child recovered and five months later the report ran: The child has developed normally, is fit and well, and growing nicely.

The facts of this case are worth reporting not only from its intrinsic interest, but also for the stimulus it gives to surgeons to separate conjoined twins and spare the autosite not only a dreadful life of bondage, but the disgust and ignominy of being exhibited for gain in public shows.

As in the case of Laloo, at birth, the parasite had its arms around his brother's neck and was delivered without difficulty. In Kapur's case the mother was a multipara, aged 35, and the conjoined twins were born easily.

It is now accepted that conjoined twins are the product of a single ovum. Occasionally both twins develop equally. It happens, not infrequently, that one of the twins is complete, but its companion is an "indigested and deformed lump." The parasite may be a headless trunk on an otherwise well-formed individual. A very rare variety is a deformed head on a limbless trunk. Capitate teratomas are rare. Dr. Dan McKenzie found in a second-hand bookshop an engraving representing a teratoma of this kind, attached near the navel of a handsome adult, born at Genoa, 1686 (Fig. 2). If any reader can supply the history of the said Poro, the writer of this note will be his debtor.

References.—Indian Med. Gaz., 1927, lxii., 1. Trans. Path. Soc. Lond., 1888, xxxix., 427.

FURTHER OBSERVATIONS ON THE EFFECTS OF PLASMOCHIN AND "PLASMOCHIN-COMPOUND"

ON THE GAMETOCYTES OF BENIGN TERTIAN AND SUBTERTIAN MALARIA.

By P. H. MANSON-BAHR, D.S.O., M.D. Camb., F.R.C.P. Lond.,

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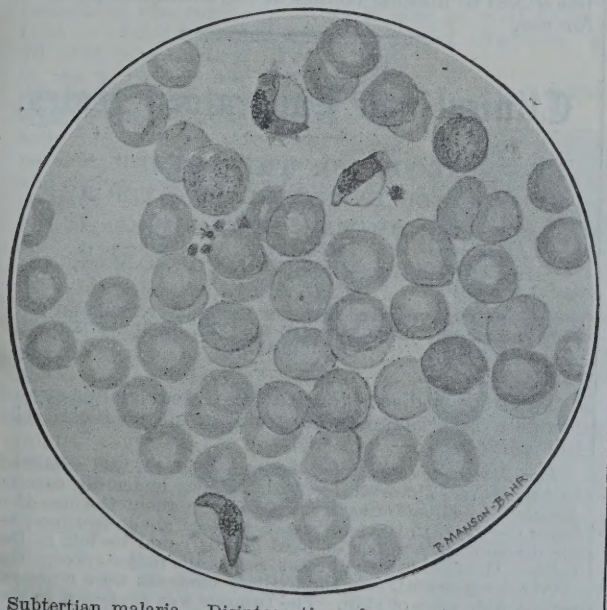
THOUGH pure plasmochin in therapeutic doses has a lethal action on the schizonts of benign tertian malaria, it has a more striking effect upon the gametocytes both of this species and of the subtertian.[1] In some individuals pure plasmochin produces a toxic effect which manifests itself in cyanosis, but this toxicity seems to be entirely eliminated by the mechanical combination of plasmochin with small quantities of quinine sulphate in the form now known as "plasmochin-compound." The latter, as this paper will show, has a direct action upon the gametocytes every whit as strong as that of plasmochin by itself.

Action of Quinine upon the Gametocytes.

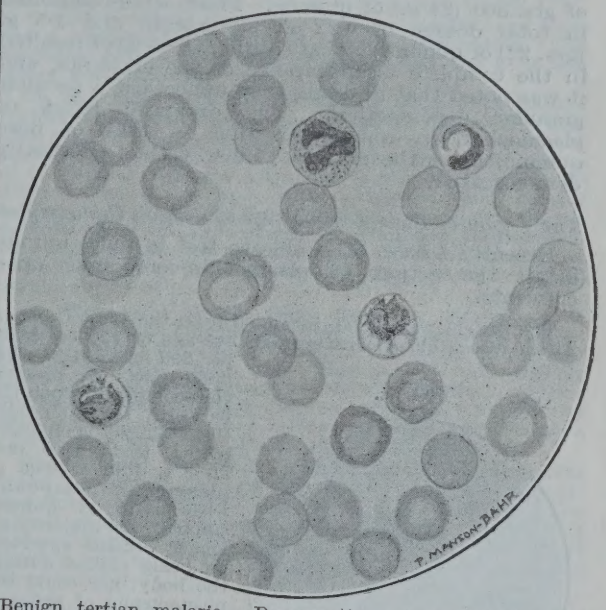
It is well known that quinine in therapeutic or even in heroic doses appears to have no direct influence upon the crescent of the subtertian parasite and is less efficacious in destroying the benign tertian gametocytes than it is in extirpating the younger schizonts of this parasite. In the compilation of this paper I have looked up my records of the past eight years on the effect of prolonged quinine administration upon the crescents of subtertian cases. There are 17 in which exact observations were made and in which the crescents were sufficiently numerous (from 8-132 to every 200 leucocytes) to warrant the drawing of any inferences. Upon full therapeutic doses of grs. 30 (2 g.) of quinine hydrochloride daily the average length of time crescents remained visible in the blood stream was 13 days, and the average number of grains of quinine hydrochloride administered was 390 (26 g.). The extremes in heavily infected cases were 28 days (grs. 840 or 56 g. quinine, in addition grs. 10 intravenously and grs. 30 intramuscularly), and 26 days (grs. 780 or 52 g., quinine, with grs. 10 intramuscularly and two injections of 0·3 g. novarsenobenzol). Other cases received, in addition to intramuscular quinine, injections of N.A.B. and two tablets of stovarsol daily without any ascertainable effects. In two instances there are records of the appearance of crescents in the peripheral blood of patients originally admitted with a heavy infection of subtertian rings while on full doses of quinine. In one crescents were seen after grs. 540 (36 g.) of oral quinine hydrochloride and grs. 14 intramuscularly, and in the other after grs. 420 (28 g.). It is thus seen that, whatever the mechanism underlying the production of crescents may be, so far from being destroyed by the action of quinine, the tendency is for the crescent—the more durable form of the subtertian parasite—to make its appearance in the circulation in the period during which quinine is exerting its maximum effect upon the younger schizonts. The inference which may be drawn from this observation is that quinine is less toxic for the young gametocyte than for other stages of the parasite.

FIG. 1.



Subtertian malaria. Disintegration of crescents (gametocytes) after taking 0·08 g. plasmochin and 1·0 g. quinine sulphate. Thirty-six hours from commencement of treatment. (Camera lucida.)

FIG. 2.



Benign tertian malaria. Degeneration of gametocytes after taking 0·06 g. plasmochin and 0·75 g. quinine sulphate. Twenty-four hours after commencement of treatment. (Camera lucida.)

The Action of Pure Plasmochin upon Gametocytes.

In four cases of subtertian malaria it has been possible to observe the effect of pure plasmochin upon crescents. The drug was given in cachet form in doses varying from 0·06 to 0·12 g. daily. In every instance the crescents disappeared from the circulation two to three days before the ring forms. The average number of days in which they were visible was four, and the average amount of plasmochin necessary for their destruction 0·3 g. No opportunity occurred at that time of making minute observations on the degeneration of the crescents before their disappearance. In six cases of benign tertian malaria in which special attention was paid to the gametocytes, the action of plasmochin upon these forms was equally striking, and the dose of plasmochin was the same.

[1] Proc. Roy. Soc. Med., 1927, xx., 919.

In June, 1927, in a heavy case of subtertian malaria with numerous ring forms—the patient taking full therapeutic doses of grs. 30 (2 g.) of quinine daily, it was noted that crescents appeared in the blood after the fourth day of treatment. Full doses of quinine were continued for the next eight days, at the end of which period they were even more numerous than before. The patient had then received a total of grs. 360 (24 g.) of quinine. Plasmochin-compound in total dosage of 0·12 g. plasmochin and 1·5 g. (grs. 22) of quinine sulphate during three days resulted in the complete disappearance of the crescents, and it was noted that in dying they underwent a peculiar granular degeneration. The dramatic effect of plasmochin, in contradistinction to that of pure quinine, upon the gametocytes was thus effectually demonstrated.

The Action of Plasmochin-compound upon Gametocytes.

Recently I have been able to test in more minute detail the action of plasmochin-compound upon crescents.

The patient was a man invalided from the West Coast of Africa whose blood contained an average of 150 crescents per 200 leucocytes. The first effects of plasmochin-compound upon the parasites was to render them almost completely inert; that is to say, after a dose of 0·03 g. plasmochin-compound with 0·375 g. quinine sulphate the majority no longer became spherical on being chilled outside the body, nor could the phenomenon of exflagellation be produced in any of them. Within 36 hours of the commencement of treatment (0·08 g. plasmochin and 1·0 g. of quinine) the crescents had assumed the bizarre and distorted shapes seen in Fig. 1. The protoplasm of the parasites had undergone a granular degeneration, while the chromatin was broken up into small clumps. Within 24 hours of the time of making this observation the disintegration of the crescents had been completed. Three further cases of subtertian malaria were treated with 0·08 g. plasmochin plus 1·0 g. of quinine with similar results.

FIG. 3.

Subtertian malaria. Appearance of crescent (gametocyte) in control case after taking 6 g. of quinine. (Camera lucida.)

In benign tertian malaria observations have been made with plasmochin-compound in 11 cases. In all of them the action of the drug was almost uniform, but less striking than in the case of the subtertian crescent. The drug appears to have an equally toxic effect upon sporonts as on the schizonts of the parasite. After treatment for 24 hours with 0·06 g. plasmochin and 0·75 g. quinine the degeneration of the parasite had commenced (Fig. 2). Again the same breaking up of the protoplasm and separation of the pigment and chromatin was observed, while the outline of the host cell can be distinguished as a hazy outline. After an average dose of 0·12 g. plasmochin plus 1·5 g. quinine the destruction of the benign tertian parasites was complete.

The therapeutic effects of plasmochin-compound in both forms of malaria has thus been conclusively demonstrated. I have been unable to observe the effects of this drug in quartan malaria.

Clinical Results.

The clinical results of plasmochin-compound treatment in my experience have been good—being a general improvement of the patient, rapid diminution in the size of the spleen (as formerly noted with pure plasmochin), and a complete absence of any toxic effects. Occasionally complaints have been made that the drug affects the digestion, but this appears to be but transient.

In order to produce a clinical cure with plasmochin-compound it appears to be necessary to continue in full therapeutic doses (0·06 g. plasmochin plus 0·75 g. quinine daily) for three full courses of one week each with intervals of five to seven days in between in order to eliminate the drug from the body.

It is too early yet to state whether plasmochin-compound effects a permanent cure in both these forms of malaria, but so far, during the past six months, no relapses have been reported by any of the patients whose cases are recorded in this paper. Children up to 7 years of age seem to tolerate the drug well in doses of 0·2 g. plasmochin plus 0·25 g. quinine. The youngest patient of 3½ years was treated with half the latter dose.

Conclusions.

Plasmochin-compound exerts a selective action upon the gametocytes of subtertian and benign tertian malaria. Even in small therapeutic doses its action upon the parasite is much more rapid and striking than that of quinine uncombined with plasmochin. The drug has the additional advantage of being tasteless, and is extremely well tolerated. The clinical results so far observed have been very satisfactory. The effect of any drug upon the crescent, which is admittedly the most resistant form of the human malaria parasite, can be taken as an index of its efficacy. In this respect it has been shown, by the facts stated above, that plasmochin in combination with small doses of quinine appears to have a much stronger parasitotropic action than either drug administered singly.

My best thanks are due to Dr. L. M. Maybury and Dr. S. K. Montgomery, my house physicians, for the care they have taken in keeping accurate records, and to Mr. F. W. Foster and Mr. R. McKay for the trouble they have expended in taking daily specimens of blood and in making counts of the contained parasites for me.

Clinical and Laboratory Notes.

SARCOMA OF THE BREAST FOLLOWED TWENTY YEARS LATER BY ABDOMINAL CARCINOMA.

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THE recent discussion [1] at the Medical Society of London on breast cancer prompts me to record the following case :—

Past History.—A married woman, aged 42, was admitted to the Royal Victoria Hospital, Belfast, under my care in January, 1906, suffering from a tumour about the size of a horse chestnut in the left breast, noticed about two months previously. A number of hard glands could be felt in the axilla. On Jan. 9th the breast, pectoralis major (except the clavicular portion), and the axillary contents were removed with a wide area of skin. The tumour was examined in the pathological department of Queen's College and the following report was given, "mixed sarcoma and carcinoma—highly malignant."

Five years later Sampson Handley's lymphangioplasty was performed for œdema of the upper arm with a satisfactory result. In 1924 a second lymphangioplasty was performed for œdema of the forearm, but the result was not so satisfactory. There were no signs of recurrence at this date.

Recent History.—In May, 1926, that is, 20 years and four months after the first operation, she was again admitted with the history that three months before she had noticed a small lump in her abdomen. On examination a number of ill-defined swellings could be felt in the abdominal cavity

[1] See THE LANCET, 1927, ii., 1181.

and free fluid was demonstrated. On May 28th a small opening was made into the abdominal cavity for diagnostic purposes. Innumerable firm papillomatous growths, of varying sizes, were found scattered all over the peritoneum from the diaphragm to the pelvis. The abdomen contained a large amount of clear fluid. A portion of growth was removed from the omentum for microscopical examination. We were fortunate in being able to find the paraffin block of the original tumour carefully numbered and labelled. Fresh sections of the tumour of 1906 and sections of the 1926 tumour were examined and compared by Prof. W. St. C. Symmers, who reported as follows:—"Breast tumour of 1906: This is a sarcoma, large round cells predominate in parts, smaller cells elsewhere. Peritoneal growth of 1926: This is a papillomatous mass, densely overrun with glandular-like masses of columnar epithelium. I suggest that this is one of many implantation metastases originating from papilloma of the surface of the ovary."

The patient had lead treatment, following, as closely as possible, the technique recommended by Blair Bell, but succumbed a few months after leaving hospital. The case is of interest in that the patient apparently was cured of one form of malignant disease to die, 20 years later, of another.

A CASE OF CORONARY OCCLUSION FOLLOWING PARTURITION.

By H. Wallace Jones, M.Sc., M.D. Liverp., M.R.C.P. Lond.,
SENIOR HON. ASSISTANT PHYSICIAN, LIVERPOOL ROYAL INFIRMARY;
AND
C. Allan Birch, M.B. Liverp., M.R.C.S. Eng.,
LATE HOUSE SURGEON, LIVERPOOL MATERNITY HOSPITAL.

THE clinical syndrome of sudden occlusion of a branch of the coronary artery is now so well known that a brief summary of its chief features is all that is necessary. The patient is, as a rule, seized with severe retrosternal or præcordial pain which may radiate down the arms or up into the neck. This pain may be agonising in severity and, unlike ordinary angina pectoris, is more or less continuous, frequently lasting days or even weeks and necessitating large doses of morphia for its relief. This is generally accompanied by signs of pericardial friction, rise of temperature, rapid pulse, marked dyspnœa and cyanosis, leucocytosis, moist sounds at the bases of the lungs, and often general cardiac failure of the "congestive type." Death may occur immediately or the patient may recover for a period varying from a few hours to several years. More than half of the cases fall into the group in which temporary recovery occurs.

The case we wish to describe was that of a multipara, aged 26 years, suffering from mitral stenosis and a slight aortic leak with a fairly well-compensated lesion. She had no evidence of arteriosclerosis, her blood pressure was normal, and her Wassermann reaction was negative. This was her second pregnancy and she was kept under observation during the greater part of its duration. She began to be somewhat distressed at thirty-three weeks, but it was decided to allow her to go another two or three weeks before inducing labour. A week later, however — i.e., at thirty-four weeks — she commenced labour normally and a living male child, weighing 4 lb. 8 oz., was delivered. The total duration of labour was three hours, the second stage being of five minutes' duration.

The puerperium was normal until the eleventh day when the patient was suddenly seized with severe pain behind the sternum. The pain was continuous and remained localised to the lower end of the sternum and was accompanied by some localised tenderness with a marked sense of constriction in the lower part of the chest. The pulse-rate was rapid (108) and the temperature rose to 100·4° F. There were also a few moist sounds at the bases of the lungs, with some dyspnœa and cyanosis. The next day there was a further rise of temperature to 101·4° F., the moist sounds in the chest were more marked, and there was a considerable amount of frothy expectoration. The dyspnœa and cyanosis were increased and the liver and spleen were palpable.

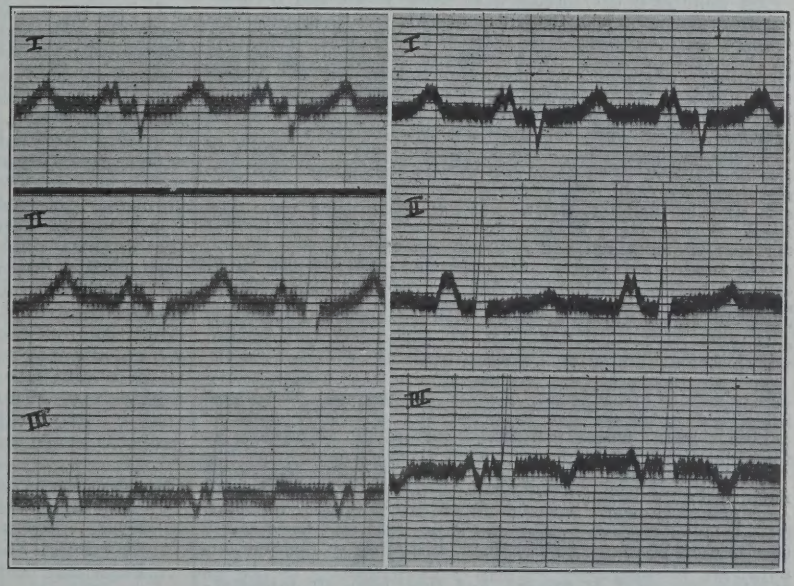
On the third day of the attack definite pericardial friction was noted slightly to the left of the middle line. The pain began to be less intense, though the dyspnœa again became more marked and for the first time œdema of the ankles appeared. On the fourth day her general distress was so marked, with orthopnœa and general œdema, that death was thought to be impending. On the next day, however, she commenced to improve, the temperature began to fall, the pericardial rub disappeared, while on the sixth day for the first time the temperature remained normal for 24 hours.

A blood count at this stage showed a leucocytosis of 20,000 per c.mm. From this time she improved steadily; she was in bed for a total period of six weeks, but is now able to go about quite well. Her heart is now slightly larger than before the attack but the valvular lesion appears unaltered, though dyspnœa is now more easily induced by effort than formerly. She has remained entirely free from cardiac pain since the attack.

We obtained electrocardiographic records three weeks before the attack (i.e., one week before labour commenced) and eight weeks after the attack (see Figs. 1 and 2). The second record shows inversion of the "T" wave in lead III. where this had been upright in the first record and also it shows a very small "T" wave in lead II. where previously there had been a large "T" wave.

This case we believe is of special interest from the following points of view: 1. Was this a case of primary coronary thrombosis occurring at an early age or was it a case of coronary embolism? 2. The accident occurred at the eleventh day, a period at which the tendency for the blood to clot after parturition reaches its maximum. 3. It is the only case which we can find in the literature where this accident has occurred after parturition and has been followed by recovery. 4. An electrocardiogram was taken three weeks before and eight weeks after the attack.

FIG. 1. FIG. 2.



Three weeks before attack of coronary occlusion. Eight weeks after attack.

A CASE OF SARCOMA OF THE CHEEK

TREATED BY OPERATION AND INJECTIONS OF COLLOIDAL LEAD.

By J. Bagot Oldham, M.B. Liverp., F.R.C.S. Eng.,
HON. ASSISTANT SURGEON, DAVID LEWIS NORTHERN HOSPITAL, LIVERPOOL.

In a recent article (The Lancet, 1927, ii., 703) Mr. Norman Patterson suggested a new method for dealing with certain neoplasms of the face. As I had employed the same principle myself over a year before, Mr. Patterson's article stimulated me to follow up my case. The record may be of interest.

The patient, aged 50, came to the out-patient department of the David Lewis Northern Hospital at the end of July, 1926. He complained of a lump on the inner side of his right cheek, first noticed some nine weeks before. On examination I found a round growth, three-quarters of an inch in diameter, on the inner side of the cheek. This lump, which was not hard but elastic in consistence, was opposite the bicuspid teeth and was beginning to ulcerate. The skin of the cheek could be moved over the surface of the tumour. The right cervical glands were enlarged but mobile; the left cervical glands were impalpable. There was no sign of any lesion in the chest or elsewhere.

Under local anæsthesia, a section was taken from the tumour, the incision being afterwards cauterised with carbolic acid. The section showed a mixed-celled sarcoma.

The patient was admitted to hospital and I operated on him on August 14th, 1926. I had previously experienced the difficulty that Mr. Patterson mentions of dealing efficiently with neoplasms in this situation without seriously disfiguring the face. I therefore employed the incision that Moure suggested for removal of the upper jaw, starting at the outer side of the orbit, running along the infra-orbital margin to the side of the nose, down the outer side of the nose, round the ala nasi, and then down the centre of the upper lip. I only made the incision skin deep and did not prolong it into the red margin of the lip. I then dissected back the skin-flap off the underlying tissues. The tumour was now removed, together with a margin of surrounding healthy tissue, by means of the diathermy. The hole which has been made in the cheek by the removal of the tumour was reduced in size by means of a few tension sutures. The deep surface of the skin-flap was lightly diathermised and then sutured back into place.

All went well till August 31st when there was a smart secondary hæmorrhage which compelled me to ligature the external carotid artery and its facial branch. The right side of the mouth drooped considerably as the facial nerve and the muscles of the face had been removed, in part, in excising the tumour. The patient left the hospital on Sept. 9th. The pathological report on the tumour was "mixed-celled sarcoma, nodule showed calcareous mass in part."

For some reason or other the patient did not return to the hospital till Oct. 21st, and it was then found that the glands in the right side of the neck had greatly enlarged in size since he had left the hospital and that they were now fixed. At operation on Oct. 23rd I removed the glands, and the scar tissue which had followed the tying of the artery, as thoroughly as I could. Convalescence was uninterrupted and the patient left the hospital on Nov. 11th. During his stay in hospital—on Oct. 28th and on Nov. 11th—I gave the man two intravenous injections of 15 c.cm. of 5 per cent. colloidal lead (as prepared by the Liverpool Medical Research Organisation, under the direction of Prof. Blair Bell). After his discharge my colleague, Dr. L. Cunningham, continued to treat him, as an out-patient, with lead injections until he had received, in all, 100 c.cm. of colloidal lead. These injections were given at weekly or fortnightly intervals; 5 c.cm. were given at each injection.

The first report on the glands was that they showed nothing but inflammatory reaction, but on further section one gland showed quite definite sarcomatous invasion. Glandular metastasis in sarcoma is unusual, so I have asked the opinion of many pathologists, including so eminent an authority on neoplasms as Dr. J. C. Bloodgood, of Johns Hopkins Hospital, Baltimore, and they have all unhesitatingly confirmed the diagnosis of sarcoma.

On Dec. 11th, 1926, the man came to see me; the right side of his face was swollen up. I found a brawny red œdematous area on the outer side of the right cheek just over the place where the tumour had been. I opened the swelling and a little pus came out. A small piece was taken and sectioned but showed no evidence of sarcoma. The swelling rapidly subsided.

The man is to-day in perfect health. The cheek is soft and supple and there is no sign whatever of any local recurrence. It is now nearly impossible to see the original incision. The right side of the neck, which at the time of the operation on the glands was swollen and indurated, is soft and normal; the scar is mobile. There is now no drooping of the right side of the mouth, though the movements of the right side of the face are somewhat defective. There is no clinical or X ray evidence of any metastasis in the chest. The man has put on weight.

This case seems to me to be of interest for three reasons. First, the principle employed in making the flap is the same as is used by Mr. Patterson. The flap used by him has the advantage of allowing the facial artery to be tied; that employed in my case would, I think, be a better one for tumours situated in the upper part of the cheek. The second feature of interest is that a case of undoubted sarcoma, and one which had already invaded the glands, should be alive and well 18 months later. Lastly, the case is an example of glandular metastasis in sarcoma.

Reviews and Notices of Books.

Outlines of Pathology.

In its Historical, Philosophical, and Scientific Foundations. By H. Oertel, Strathcona Professor of Pathology in McGill University, Montreal. Montreal: Renouf Publishing Co. 1927. With 132 coloured and plain figures. Pp. 479. 50*s*.

Pathology is a science of itself and unless it develops its own individuality it will never cease to be the 'tweeny of clinical medicine. There are a good many signs that some such view is commoner than it was 20 or 30 years ago; at Cambridge, for example, under Prof. H. R. Dean, pathology has become one of the subjects for Part II. of the Natural Science Tripos, and not long ago Dr. Powell White wrote a book to illustrate the biological significance of his science. Prof. Oertel holds that it is the business of pathology to work out a causal mechanistic explanation of the morphological changes which accompany disease. Whether they look on Prof. Oertel as a prophet or a heretic, everyone with a serious interest in pathology ought to read his book, in which they will find the topics familiarly grouped under "general pathology" treated in an atmosphere of history and philosophy which they have probably not met with before in this connexion. We are bound to agree with his contention that a subject ought to be studied in its historical relationships and that we ought to be more careful in our thinking, not confusing (as we often do) interpretations with explanations and talking rather wildly about causation. But careful thinking does not necessarily mean a return to the mechanistic biology of last century, and to ban any teleological outlook as unscientific is in our view essentially unsound and pedagogically disastrous. If biologists had known more about pathology—about the reactions of the body to unfavourable conditions which pass through their cycles in a time which enables us to see the whole process—more of them would have a conviction that the live world is purposive. It has been wisely said that a theory is true if it is fruitful; by that test teleological interpretations are amply justified.

Cardiology.

Growth of Our Knowledge of Heart Disease. By R. O. Moon, M.A., M.D., F.R.C.P., Consulting Physician to the Royal Waterloo Hospital; Physican to the National Hospital for Diseases of the Heart. London: Longmans, Green and Co., Ltd. 1927. Pp. 86. 3*s*. 6*d*.

Dr. Moon's sketch of the history of cardiology makes agreeable reading. The author tells his story in an attractive and simple fashion, tracing the progress of knowledge from the days when the arterial pulsations were attributed to "the rhythmical efforts of the vital spirits to escape from imprisonment" up to the present time. The ingenuity of some of the classical writers in explaining the functions

of the different organs of the body almost tempts one to wonder whether they were always serious. Plato, for example, enunciates the theory that the lung was placed about the heart as a soft spring, that when passion was rife the heart might be refreshed and suffer less. Harvey's discovery so eclipsed the work of his predecessors that it is easy to overlook their contributions to knowledge. These Dr. Moon has displayed in admirable perspective. He has done specially good service in recalling the observations of Servetus, who first described very clearly the pulmonary circulation and pointed out the function of the lungs in aerating the blood (and incidentally suffered martyrdom at Geneva for his heretical opinions).

When we come to more recent times it is more difficult to assess the work of different physiologists and clinicians at their true value. On the whole, Dr. Moon's attempt to do so is admirable. The name of Marey, whose researches in the physics of the circulation were of outstanding merit, is not mentioned, but he will doubtless find a place in a future edition. Cardiology is such a fundamental part of medicine that a survey of the gradual building up of the modern conception of heart disease will interest all doctors.

PULMONARY TUBERCULOSIS.

Its Etiology and Treatment. Second edition. By DAVID C. MUTHU, M.D. Brux., M.R.C.S., L.R.C.P. London: Baillière, Tindall and Cox. 1927. Pp. 381. 12*s*. 6*d*.

THE worthy Duke of Queensberry, when asked to give his opinion of the "Beggar's Opera," observed: "This is a very odd thing, Gay; I am satisfied that it is either a very good thing or a very bad thing." A similar judgment might be pronounced on Dr. Muthu's book, a second edition of which has been published, for if this is not a good book it is a very bad book. A great part of it is devoted to maintaining the thesis that the tubercle bacillus is the effect and not the cause of tuberculosis. Dr. Muthu almost denies the bacillus the right to a name in suggesting that it may be the offspring of the pneumococcus (p. 51) and the brother of the gonococcus (p. 52). He holds that abnormal metabolism, the result of faulty hygiene, gives rise to changes in tissue cells which are thereby converted into morbid bacteria, and that these are thus the product of the body in which they are found. He states that the attempt "to connect epidemics with specific micro-organisms has not been successful." He insists that we can have plague without rats, malaria without mosquitoes, and tuberculosis without tubercle bacilli. He has seen cases of cholera and bubonic plague occurring "through sheer fright or nervous fear," and claims that others have noted outbreaks of small-pox, erysipelas, and even hydrophobia "propagated by grave nervous apprehension."

Dr. Muthu blames the materialist blindness that prevents us from recognising that tuberculosis can be caused by fear "without the intervention of micro-organisms." Tuberculosis is the result of malnutrition and this is caused by faulty social conditions. "We must decide," he writes, "whether tuberculosis is an infectious or social disease. We cannot have it both ways . . . while believing in contagion we cannot consistently swing round and attack poverty, alcohol, bad housing, low wages, and other social evils." Would he also maintain that those who believe alcohol to be the cause of drunkenness cannot consistently object to slums? Is he not himself having it both ways when he states that a parental history of tuberculosis is as common among persons who show no evidence of tuberculosis as it is among those who have definite clinical disease (p. 38), and that the children of tuberculous parents are more often tuberculous than those of normal persons (p. 80)? No one familiar with the problem of tuberculosis will deny the importance of poverty, bad housing, bad feeding, and intemperance as factors that may determine its spread. Much that the author has to say on these subjects is true, but when he assumes the rôle of prophet his ready utterance betrays him. A tendency to exaggeration is evident in such a statement as that "the Empire has grown at the expense of the health of the people." Where was the Empire in the days of the Black Death, a pestilence due, if we are to believe Dr. Muthu, not to the plague bacillus but to faulty hygiene? What growth had it attained in the year of the Great Plague?

A distinguished surgeon has stated that this is a book "to make one think." Dr. Muthu is right in his contention that the study of disease should not begin and end in the laboratory. He is right in his insistence that the study of tuberculosis should involve that of heredity, sociology, biochemistry, psychology, and even ethics. But study that is not based on research is profitless, nor are "the intuitions of the mind and visions of the spirit" of any avail if we fail to appreciate the meaning and value of evidence.

THE FITZPATRICK LECTURES.

The History of British Midwifery from 1650 to 1800. By HERBERT SPENCER, M.D., F.R.C.P., Emeritus Professor of Obstetric Medicine in University College, London. London: John Bale, Sons and Danielsson. 1927. Pp. xxiv.+185. 15*s*.

A FULL abstract of the FitzPatrick Lectures, delivered last year before the Royal College of Physicians by Dr. Herbert Spencer, appeared in THE LANCET of Nov. 12th. These lectures have now been published in extended form. Too often the more specialised parts forming the "corpus" of the history of medicine have failed to give satisfaction because the writers have lacked either experience in the examination of records or any real practical knowledge of their subject. It is, therefore, fortunate that the work of writing the history of British midwifery has fallen to the lot of Dr. Herbert Spencer, for while his obstetric experience is vast he has devoted much of his spare time to the study of the history of medicine. He is, therefore, doubly equipped for the task, and the book he has produced is an excellent piece of historical writing.

Dr. Spencer adopts the biographical method, and while explaining the advances made in the seventeenth and eighteenth centuries, he tells us much that makes delightful reading concerning the lives of those who were pioneers in obstetrics. The book is written in a vigorous style. We congratulate the author upon the production of a volume which will take its place in the ever-increasing library of books dealing with the history of British medicine. The work takes us no further than the year 1800, but up to that date the task has been well performed. We look forward to a sequel bringing the story up to date.

MUSCULAR MOVEMENT IN MAN.

The Factors Governing Speed and Recovery from Fatigue. By A. V. HILL, Foulerton Research Professor of the Royal Society. New York: McGraw-Hill Book Company, Inc. 1927. Pp. 104. 12*s*. 6*d*.

THIS book contains the George Fisher Baker lectures delivered by Prof. A. V. Hill at Cornell University in the spring of 1927. It deals with the physiology of muscular exercise from the point of view of athletes, and is based largely on observations made in England and America (some being on the athletes of Cornell) by Prof. Hill and his colleagues. In the first five chapters the author describes the method of calculating the amount of energy produced during exercise from measurements of oxygen consumption, and discusses oxygen requirements, oxygen debt, buffering in the muscles, and the respiratory quotient. In considering the factors which determine the oxygen intake reference is made to the extraordinary amount of work which the heart may be called upon to perform. The next five chapters contain various mathematical calculations bearing on the maximal speeds attainable over different distances and the mechanical efficiency of the muscles. An

ingenious device is employed for accurate timing over short sections of the course, the runner carrying a magnet which induces currents in coils placed by the side of the track, the currents being recorded in a galvanometer. The last five chapters deal with heat production and other phenomena observed in isolated frog's muscle; and a viscous-elastic model is described, the properties of which closely simulate those of skeletal muscle. The study of muscular movement does not arouse widespread enthusiasm among students when it is demonstrated by a frog's sartorius lying on a thermophile; but the application of physiology to athletics awakes a new interest, and even those who are incapable of following all Prof. Hill's mathematics can hardly fail to be fascinated by his story of muscular movement in man.

NASAL NEUROLOGY, HEADACHES, AND EYE DISORDERS. By GREENFIELD SLUDER, M.D., F.A.C.S., Director of the Department of Oto-Laryngology, Washington University, St. Louis. London: Henry Kimpton. 1927. Pp. 428. 50*s*.

DURING the last 10 or 15 years Prof. Sluder has devoted much attention to certain nervous disorders, especially some forms of headache, arising from intranasal disease, or at any rate influenced by intranasal treatment. He has written numerous monographs on various aspects of the subject, and has now brought this material together in one volume. Dr. Jonathan Wright contributes a short preface on chronic hyperplastic inflammation within the nose, a condition which Prof. Sluder believes to be at the bottom of many of the disorders discussed in the body of the work.

The book is a large one, and not only exacts, but repays, close and careful study. The first condition described is "vacuum frontal headache with eye-symptoms only," which the author defines as a low grade, unending headache established by closure of the frontal sinus, without nasal symptoms or signs—i.e., obstruction or secretion. It is made worse by use of the eyes, and these patients have ocular symptoms only; the air is partly absorbed in the sinus and the negative pressure causes the walls to be sensitive. The thinnest part of the wall is at the pulley of the superior oblique muscle, and the nasal origin of the trouble is revealed by tenderness at this point and internal and posterior to it (Ewing's sign). The author believes that the mechanism of the closure is a combination of unfavourable anatomical settings with hyperplastic changes in the soft parts and bone, and he provides a very thorough description of the anatomy of the infundibular region of the nose. The treatment he recommends first is to apply astringents to this region, and he relates a case in which this kind of headache of five years' duration was permanently cured by application of 2 per cent. silver nitrate about 12 times over a period of three weeks. If this fails, he frees the inlet to the anterior ethmoidal labyrinth, at the same time removing the anterior two-thirds or three-fourths of the middle turbinal, by a somewhat difficult operation involving a very high incision, 2 mm. from the cribiform plate. The results of this operation are reported in six cases, but it would have been very helpful to other rhinologists had Prof. Sluder indicated how frequently a cure may be expected from simple and how frequently from operative treatment. The relative frequency of this kind of headache is difficult to estimate, and all experienced rhinologists will have met cases of headache of all kinds temporarily "cured" by all kinds of operation. It will be a step in advance if Prof. Sluder's description enables the rhinologist to identify one type curable by comparatively simple methods.

Anterior ethmoidal, that is to say naso-ciliary, neuralgia is a rarer condition identified by the author's clinical description; it is due to the anterior ethmoidal nerve, and the pain ceases at once on application of cocaine to the point of entrance of the nerve into the nose; the condition may be treated by injecting the nerve in this situation. A long chapter is devoted to nasal (spheno-palatine or Meckel's) ganglion and the neuroses traceable to it. The most direct of these is the "lower half headache," with pain in the roof of the nose, upper or lower jaw and teeth, the eye, and the ear, especially at a point 2 inches behind the mastoid; the "sympathetic syndrome" is much more complex and includes, besides rhinorrhœa and photophobia, an astonishing variety of symptoms, whose connexion with the spheno-palatine ganglion it is impossible to trace. Prof. Sluder gives full details of the method of injection of the ganglion. The final chapters relate to his technique for opening the maxillary antrum, and to the subject of orbital abscess, neither of which have any bearing on the contents of the rest of the book, and might have been omitted with advantage. A notable feature of the work is the detailed anatomical study of the regions concerned, and it is profusely illustrated.

The book contains much to interest, not only the rhinologist, but the ophthalmologist, neurologist, and general physician.

DIPHTHEROIDS AND STREPTOCOCCI.

Annals of the Pickett-Thomson Research Laboratory. Vol. II., No. 2, pp. 175; Vol. III., pp. 301. Edited by D. THOMSON, O.B.E., M.B., D.P.H., and R. THOMSON, M.B. London: Baillière, Tindall and Cox. 1927. Price per vol., 42*s*.

THESE two volumes comprise studies of the diphtheroid group of bacteria and of the streptococci, made upon rather unconventional lines. The authors have been at immense pains to abstract the literature of the subject, and the results of this occupy the major portion of both volumes, which are thereafter supplemented by some account of their own views and personal investigations. As regards the latter, their method in the case of the diphtheroid bacilli is to catalogue each species which they have met with, recording the ordinary morphological and biological features, and then to photograph the organisms and to reproduce the photographs of colony form and microscopical appearances, which they believe to be of great importance. Over two hundred photographs of diphtheroids are reproduced. The criticism which most bacteriologists will make against this procedure is that too great confidence is placed on the permanence and fixity of morphological characters which, it is generally held (though perhaps with over-emphasis), are of little or no reliability in comparison with biological tests.

The volume which deals with the streptococci is also essentially a literary review of the subject rather than a serious contribution of original work. Out of a total of 300 pages of letterpress, 250 are of this nature. There follows a short article by Dr. Warren Crowe, upon his scheme of streptococcal differentiation, and the book is completed by a bibliography and 57 full-page half-tone and colour plates. The bibliography includes references to more than a thousand original papers, a fact which bears witness to the wide reading and inexhaustible energy of the editors. Many of the papers are abstracted copiously, and long quotations, sometimes occupying several pages, of the more important ones occur. In fact, as a résumé of what has been written and said about the vexed question of streptococcal activities and classification, no single review has ever been published which approaches this, and the volume, therefore, has considerable value as a work of ready reference.

With regard to the original matter in the book, the authors have collaborated with Dr. Warren Crowe in propounding a scheme of classification based primarily upon colour changes in "chocolate" media containing heated blood. They describe five main groups upon these grounds with a total of 20 sub-groups which emerge when hæmolytic ability, colony form, and morphology are considered. Within these sub-groups they differentiate types upon the basis of sugar tests. This classification is supplemented by the reproduction of the photographic characters of colony form and microscopic appearance of over a hundred strains, each of which is considered a distinct

species. That these differences exist under the conditions of observation is beyond doubt, but the larger question of whether their significance is that which the authors attribute to them remains open. It would be possible for any sufficiently ingenious and patient person to classify the pebbles on the seashore into innumerable species if their individual characters were observed with sufficient detail.

PRACTICAL BACTERIOLOGY, BLOOD WORK, AND ANIMAL PARASITOLOGY.

Eighth edition. By E. R. STITT, A.B., Ph.D., M.D., Rear-Admiral, Medical Corps, and Surgeon-General, U.S. Navy. London: H. K. Lewis and Co., Ltd. 1927. Pp. 837. 24*s*.

THIS is essentially the practical pathologist's handbook. There is hardly a laboratory of any size in the English-speaking world in which it does not hold an honoured place—a place, moreover, from which it is frequently removed for reference. The eighth edition is of the same format as its immediate predecessors and is only slightly larger. The author manages in succeeding editions to pack increasing amounts of information into the book, with only a very slight increase in bulk; this can only be achieved by a masterly utilisation of every square millimetre of available space, even to the insides of the cover and the fly-sheets. The new edition has been brought thoroughly up to date. In the chemical section the tests for liver function are competently dealt with and the technique for the van den Bergh reaction, both quantitative and qualitative, is fully set out. In the section on blood the new knowledge on the platelets and the hæmorrhagic diatheses is ably summarised. The section on grouping and matching of blood constitutes the only exception to the admirable brevity and conciseness elsewhere throughout the book. The subject is made rather more involved than necessary, and in grouping and matching the unnecessary complication of citrating and spinning out the red cells is advocated. It is interesting to note that Admiral Stitt still holds that evidence that the common cold is "catching" is "academic." This seems to indicate some individual peculiarity of experience on his part.

BIRTH INJURIES OF CENTRAL NERVOUS SYSTEM.

Part I. By FRANK R. FORD. Part II. By BRONSON CROTHERS and MARIAN C. PUTNAM. (Medicine Monographs. Vol. XI.). London: Baillière, Tindall and Cox. 1927. Pp. xiii.+164. 18*s*.

IT is surprising that so little has been written on the subject dealt with in this monograph. In this volume two papers by different writers have been brought together, the first on Cerebral Birth Injuries, by Dr. F. R. Ford, of the Johns Hopkins Hospital; and the second on Cord Birth Injuries, by Dr. Bronson Crothers and Dr. Marian Putnam, of Harvard. Dr. Ford's paper does little more than define the subject, and it is to be hoped that he will continue his work, for an adequate presentation from the clinical standpoint is badly needed. He describes the needful spadework and how the cases of birth injury are being separated off from those of congenital and developmental defect. For instance, he says: "Convincing evidence has been gathered that the congenital diplegias which constitute by far the largest group of infantile spastic palsies, as seen in the pediatrics department, are not to be attributed to meningeal hæmorrhage at birth, but are the result of various pathological processes of intra-uterine origin." With this view neurologists in this country were already familiar from the work of Dr. James Collier, to which there is made abundant reference. Hydrocephalus also, according to Dr. Ford, is in most cases not the result of injury of the brain at birth. When he has disposed of two great groups of cases the author has found few left to describe, but in our opinion he has devoted insufficient space in his paper to the important remainder which really form his subject. He discusses approximately 50 cases in which the diagnosis of intracranial birth hæmorrhage was made or suspected. Out of the whole group only seven survived, and of those seven, only one developed any permanent symptoms. Dr. Ford says: "The common diffuse meningeal hæmorrhage, which is not large enough to cause death, apparently leaves no residuum in the overwhelming majority of cases. The real birth injuries to the brain are caused by the rarer intracerebral hæmorrhages and necroses, by depressed fractures with laceration of the brain, and, undoubtedly, by some more or less encapsuled meningeal hæmatomas which compress and soften the cortex." We cannot agree that such cases are rare, and it is precisely their clinical pictures which require to be defined and correlated with the pathological conditions.

The more limited subject of cord birth injuries has been excellently handled by Drs. Crothers and Putnam; their paper is most instructive. It is surprising that they should have been able to collect 28 cases of this kind within a few years, for these cases seem to be rare in this country; presumably their relative rarity must depend on some difference in obstetric technique. Dr. Crothers and Dr. Putnam show that they are due to severe traction on the legs and trunk in cases of breech presentation; as a result of such "unphysiological" force the spinal cord is torn, and the resulting syndrome depends on the extent and level of the injury; doubtless the patient's general condition also has some influence on the vitality of the distal portion of the cord. The authors are careful not to throw blame on obstetricians, but they say: "The striking contrast between the apparent incidence of injury and the almost total ignoring of the subject by writers of obstetrical text-books justifies us in suggesting that a definite shift of emphasis is desirable." These papers together form an important contribution to the subject of birth injuries of the central nervous system. The book is beautifully got up.

AIDS TO BIOCHEMISTRY.

By E. ASHLEY COOPER, D.Sc.Lond., F.I.C., A.R.C.S.Lond., and S. D. NICHOLAS, B.A.Oxf., A.I.C., Lecturers in Chemistry, University of Birmingham. London: Baillière, Tindall and Cox. 1927. Pp. vii.+188. 4*s*. 6*d*.

ONE who attempts to write on "Aids to Biochemistry" in a small volume of some 180 odd pages must be an optimist. In the first place, biochemistry is composed of so many different branches extending from chemical physiology and pathology on the one hand, down to leather-tanning industries on the other, that it can only be possible to supply aids to one branch of the subject at a time. In their preface the authors state that the book is intended to present the general principles of biochemistry to medical and science students, so that they have more or less committed themselves to the physiological side of biochemistry; but they do not show themselves to have a broad conception of the subject as a whole. For instance, although the sections dealing with the pure chemistry of the fats, carbohydrates, and proteins are fairly clear and form an adequate summary, the physiological aspects of these bodies are not considered at all. The authors may have felt that lack of space prevented the consideration of that side of the question, in which case it was surely a mistake to include a summary of the chemical aspects of some of the alkaloids with which the medical or physiological student is but little concerned. The space would have been much better employed in the consideration of metabolism. Again, the chapter on colloids is so condensed as to be practically useless, since the more important classification is, according to most people, the separation of the colloidal solutions into lyophilic and lyophobic. This important point is not mentioned.

The authors have undertaken a difficult task. They have written far too much from the purely

chemical standpoint for the book to be of practical service to medical and science students. Their book would have been of greater value if the chemical had been better balanced by the physiological aspects of biochemistry.

ANTE- AND POST-NATAL WELFARE.

The Principles of Antenatal and Postnatal Child Hygiene. By W. M. FELDMAN, M.D., M.R.C.P. Lond., F.R.S. Edin. London: John Bale, Sons and Danielsson. 1927. Pp. 743. 25*s*.

AN adequate summary of the contents of this remarkable compilation can hardly be given in a small space, owing to the diversity of the material which has been assembled. It is intended both for the lay and the medical public, and especially for those who are concerned with some branch of ante- or postnatal welfare. Information is given on every aspect of child study—historical, literary, biological, and practical. For example, an historical survey of child welfare ranges from Babylonian times to the present day, and is illustrated by photographs of classic tablets bearing on the subject, and of a large number of pediatrists of past and present years. A chapter on heredity contains a concise summary of the principal theories, and a discussion of the application of Mendelian laws to disease in general and to mental defect in particular. Another chapter on biometrics presents the essentials of the statistical method to such readers as possess some knowledge of the higher mathematics. The theory of nutrition, the practice of feeding, prevention of disease, physical and mental development, and many other branches of child study are depicted in like manner, the accounts being valuable, yet not so technical as to limit their utility to purely professional readers.

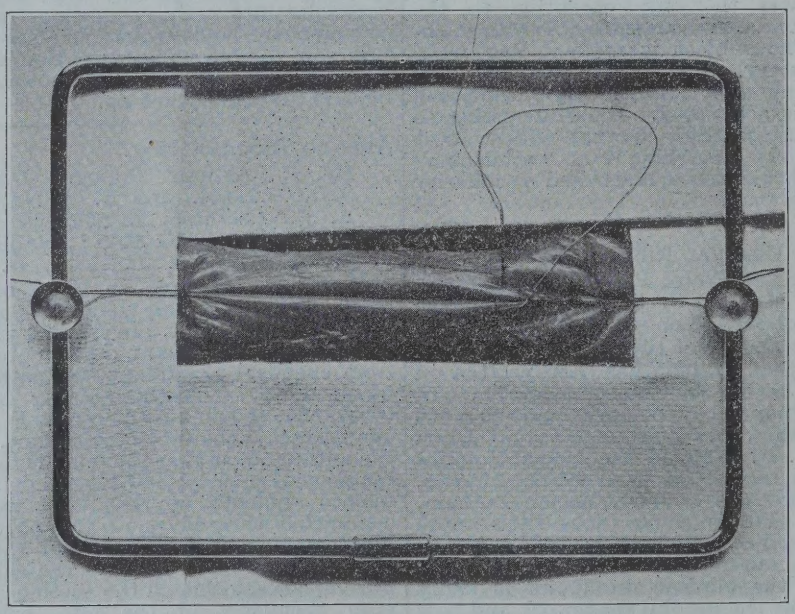
Dr. Feldman may be congratulated on having produced a volume which is original and attractive.

New Inventions.

NEW "LOOP TRACTOR" FOR USE IN GASTRO-INTESTINAL ANASTOMOSIS.

MANY surgeons to-day consider that there is a real element of danger to the patient in applying any form of clamp, even if rubber-protected, to an already partially devitalised intestine for the purpose of doing an anastomosis. The clamp is often applied for a period of from one to two hours or less, depending upon the dexterity of the surgeon. The degree of compression exerted will necessarily vary with the judgment of the operator.

Deaths from perforation or hæmorrhage due to necrosis occurring on the line of the constricting clamp have been recorded in several instances in the hands of thoroughly experienced surgeons. The cause of death was discovered at autopsy. Clamps, as usually applied, impede the operation, obscure the bleeding points, and make accurate closure at the angles of the anastomosis especially difficult. One surgeon told me he had abandoned the use of clamps entirely on account of the above-mentioned complications.



Loop tractor for gastro-intestinal anastomosis.

It has been the custom where clamps were not used in doing such operations to suspend the loops at either end by a suture grasped in forceps and held by an assistant whose hands, at best, are unsteady and in the way of the surgeon. The tension is variable and uncertain, and the suture line as a result is often imperfect. The device described overcomes all the defects above mentioned and releases the assistant for more important duties.

The instrument which I have devised will, in my opinion, perform very well the work of the clamp and is devoid of these dangers. In addition, where clamps are not used, bleeding points can be seen and ligatured before the anastomosis is completed, thus reducing the danger of post-operative hæmorrhage. Before opening the intestine it is advisable to strip its contents downwards, while the stomach, if safe to do so, should be emptied before operation.

The illustration shows the "loop tractor" in use. Its object is to suspend the intestinal loops in a taut position for suturing, and it consists of a metal frame 5 inches by 7 inches, rectangular in shape, and having a holding button situated at the middle of either end. The button is seated closely on the frame so that a suture passed around it once grips without tying. A fine linen-holding suture is the one of choice for this purpose. The frame is placed to surround the abdominal incision and rests on the sterile towels; the loops of intestine are brought up through the frame and the desired length of each loop is picked up with tissue forceps. The loops are then brought parallel to each other and a linen suspensory suture passed through a small bite, of peritoneal and muscular coats only, at either end of the anastomosis. The ends of these sutures are grasped and drawn firmly in opposite directions and wound around the button on each end of the frame, as shown in the illustration. Thus the loops are held firmly on the stretch while stitching is being done.

After thoroughly testing the forms of clamp I have come to the conclusion that this method renders these operations less difficult, secures a greater degree of safety to the patient, and that the loop tractor does the work of an assistant and does it more efficiently.

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Vancouver, B.C.

THE LANCET.

LONDON: SATURDAY, JANUARY 7, 1928.

PUERPERAL INFECTION.

THE report by Dame JANET CAMPBELL on the Protection of Motherhood,[1] to some of the general aspects of which we have already called attention,[2] will be read with special interest by those engaged in obstetric practice, for in spite of all the measures that have been taken since the war the maternal mortality-rate remains but little altered, and sepsis is still responsible for approximately half the deaths in childbirth. The overwhelmingly prevalent organism in puerperal infections is the streptococcus. This field of bacteriology has been widely explored in recent years, and no case has been made out for the existence of a specific puerperal streptococcus. Classification of the various strains and types of organism isolated from cases of sepsis has been impeded by a lack of a nomenclature common to the different laboratory workers. The most recent work from St. Bartholomew's indicates that a preliminary grouping into hæmolytic and non-hæmolytic varieties is unsatisfactory, since the property of hæmolysis varies within fairly wide limits, according to whether the cultures have or have not access to oxygen. If this work is confirmed, the identification of the infecting organism becomes an even more complex problem than had appeared, for classification based on morphology and specific cultural characteristics is open to many objections, and even the property of virulence varies with the laboratory animal employed. Bacteriological investigation of the vagina and cervix during pregnancy indicates the presence there of streptococci in a small proportion of cases; it is commonly stated that these are not the organisms which cause puerperal fever, and the statement is made the basis of an argument against autogenous infection. That autogenous infection cannot, however, be positively excluded is proved by the sudden and definite rise in the puerperal septic rate which occurred in 1919–20, a rise which coincided with demobilisation following the armistice. The occurrence pointed strongly to the conclusion that the infected male urethra can and does infect the female genital tract; such an obvious potential source of infection raises the question of the advisability of instructing the public on the subject of coitus during pregnancy. French observers have found streptococci on the male genital organ in the absence of any venereal infection. These are arguments more forcible than any based on the morphology or even on the cultural characteristics of isolated streptococci, and they need for their proof or disproof such extended research as might be organised from the offices of the Public Health Committee of the League of Nations. For if once it can be established that the causative organism is not generally present in the genital tract before delivery, the problem is narrowed down to that of how it gains entrance during parturition or the puerperium. Not that the mode of entry is then a simple problem. The development of septicæmia after a labour conducted without internal examination or interference of any description is familiar to every obstetrician. Small epidemics arise now and then in lying-in hospitals and homes, where the technique is apparently aseptic. In the present report to the Ministry evidence is forthcoming of another mode of infection which has long been suspected—namely, from the infected air passages of the attendant. The throat and nose are well-recognised sites of the pyogenic streptococcus; here is the record of more than one epidemic of puerperal fever attributed either to the nose (empyema of the antrum) or the throat (septic tonsillitis) of the attending midwife or pupil. We know of evidence, not mentioned in the report, incriminating bedding as a source of puerperal infection.

Enough has been said to indicate the very diverse and complex nature of the mode of infection in puerperal fever, a consideration to be borne in mind when the statement is made that this is a preventable disease. Admittedly it is preventable, but prevention entails far more than the application of antiseptics to midwifery, of paramount importance though this is, and far more than the extension of antenatal clinics or of hospital facilities for lying-in women. Until such time as we are in a position to prevent the entry of organisms into the genital tract, the first step in the prevention of the disease is to raise the resistance of the patient to the prevailing organism. It is essential for us to know what is the best specific prophylactic measure to employ for the prevention of streptococcal infection, how long it takes to acquire such immunity, and what is its degree and duration. As yet we have no exact knowledge on these points. If the prophylactic measures now available are meagre, our knowledge of the therapeutic measures which can be usefully employed, once the infection is established, is even more so. In reporting to the North of England Obstetrical and Gynæcological Society in 1926 a committee appointed to investigate puerperal blood infections stated: "The committee have been faced with the difficulty that a variety of different methods have been employed in almost every case, and they feel it is quite impossible to express a definite opinion as to the efficacy of any particular method." The same criticism might have been applied to the treatment of eclampsia before the Eclampsia Committee of the Royal Society of Medicine began to take the matter in hand in 1924, since when cases were treated on more uniform lines and results of comparative value obtained. In the London area an attempt at coördination has been made by grouping cases of puerperal fever into two main hospitals of the Asylums Board, under the care of an obstetric consultant, and the time is ripe for a more general extension of this principle. Theoretically two quite different lines of treatment are available. The one in more general use in this country is to raise the resistance of the subject by autogenous or stock vaccines, and by the use of sera and simple or immuno-blood transfusions. The other, more frequently employed in America than in this country, is to render the blood unsuitable for the growth of organisms by injecting chemical substances such as mercurochrome. We need a controlled series of investigations comparing these two lines of treatment, and the researches of L. E. COLEBROOK suggest a line along which such an investigation might be carried out. When it is demonstrated by his methods that the leucocytes have lost their power of attacking organisms, the "American method" might be employed. When it is found that this property is retained though in diminished degree, an attempt might be made both to produce an artificial leucocytosis and to increase the circulating antibodies.

[1] Ministry of Health. Reports on Public Health and Medical Subjects. No. 48. H.M. Stationery Office. 1927. Pp. 87. 9*d*.
[2] THE LANCET, 1927, ii., 1352.

We must admit that, while some gaps in our knowledge of puerperal fever have been filled, many still await solution; we know, indeed, little more of the pathology of the disease than did CHARLES WHITE or SEMMELWEIS.

GASTRO-DUODENAL ULCERATION.

PEPTIC ulcer is a curious affection which has baffled all attempts to elucidate its ætiology. Many surgeons following the teaching of the Mayo Foundation, based upon the experiments performed in the first instance by E. C. ROSENOW, regard the lesion as set up by streptococci which have travelled from some other focus in the body, living in which they have, by some mysterious and unexplained mechanism, acquired a special affection for the tissue of the gastric wall. L. R. BRAITHWAITE, in this country, has shown how lymph from the appendix may, in disease, travel up to the region of the greater curvature of the stomach, and other surgeons have seen in this the path by which streptococci causing appendicitis reach the stomach to cause gastric ulceration. This alluring hypothesis, however, is not satisfying to the critic who is aware that the histology of gastric ulcer is as unique as the reaction of the tissues to the tubercle bacillus, and quite unlike the picture of the defence set up to streptococci lodged elsewhere in the body. Neither are we quite sure that high acidity is a necessary condition for ulceration to occur, even if it is fairly certain that diminished secretion by the stomach is unfavourable to its onset. This honest doubt as to the causation of gastro-duodenal ulceration is reflected in the perennial argument and dispute which centres around the treatment of this condition, and is well illustrated in the proceedings of the Washington meeting of the American Medical Association which are now available.[1] As usual there were strong advocates of radical resections in all cases, and others who were only forced to adopt such measures after simple methods had failed to cure the patient. R. LEWISOHN (New York), for instance, contended strongly for routine resection in all cases, and in this he was supported by G. W. CRILE (Cleveland) so far as gastric ulcers are concerned—a position taken up by a large number of English surgeons.

The greatest difference of opinion occurred over the treatment of duodenal ulceration. C. H. MAYO and D. C. BALFOUR (Rochester, Minn.) expressed firm conviction of the inadvisability of resection of the duodenum. Their experience is so large and agrees so closely with that of Sir BERKELEY MOYNIHAN that great weight must be attached to it. Yet from time to time accounts appear of series of cases where gastro-jejunostomy has failed to bring about such good results. E. R. ARN (Dayton, Ohio), at the Washington meeting, spoke of having studied 200 cases of gastro-jejunostomy, performed for some lesion in the duodenum, which had subsequently come under his care because of persistence of their symptoms, or because of the occurrence of hæmorrhage or perforation; in all of these when the abdomen was reopened the anastomosis appeared to have been performed satisfactorily. Other observers have found that the number of poor results from gastro-jejunostomy for duodenal ulcer increases as year by year elapses from the time of the operation. Evidently further study of this question is required. If in the long run resection should prove more effective it is reasonable to suppose that technique would be evolved which would eliminate some of its present dangers. All surgeons agree that a large resection should be performed when marginal or jejunal ulceration has followed gastro-jejunostomy, and that resection should be attempted if possible whenever the original ulcer has remained unhealed, thereby tacitly admitting the greater efficacy of the more severe operation. Whether a radical policy ought to be adopted in the first instance can only be decided by more complete investigation than has yet been made. A great advantage of duodenal resection for the patient is that he need not, as after gastro-jejunostomy, take any special care about his diet.

One thing, however, is certain. The view is gaining ground that neither duodenal nor any other form of peptic ulcer should receive surgical treatment until a thorough medical cure has been tried. A good illustration of this is given in a paper which we publish in this issue by Prof. H. MACLEAN and two of his colleagues at St. Thomas's Hospital. By the intelligent use of intensive alkaline treatment, combined with a suitable measure of rest, practically all uncomplicated ulcers have in their experience been cured in a comparatively short time with little or no discomfort or inconvenience to the patient. The alkali used is the familiar mixture of three carbonates—soda, magnesia, and bismuth—a teaspoonful of the powder being given in milk, at first two-hourly by day and as often as necessary by night. This treatment, which has often shown good results after other methods have failed, has been controlled by X ray observation revealing from week to week the steady filling up of the ulcerous crater until it is completely obliterated. Some of the radiograms reproduced with Prof. MACLEAN'S paper are almost diagrammatic in their precision. While, then, it is possible that resection of the duodenum may become the correct surgical treatment for ulcer in this situation, it is more sure that when real knowledge of the disease is acquired some simple non-operative measure will be substituted for large resections of the stomach and for physiologically disturbing anastomoses between segments of the alimentary canal. Surgery, our standby in the resistant case, will then only be called upon to relieve the neglected patient.

[1] Journal of the American Medical Association, 1927, lxxxix., 1649, ff.

THE REGISTRATION OF MEDICAL STUDENTS.

AT the last meeting of the General Medical Council a Report was presented by Sir HUMPHRY ROLLESTON, Chairman of the Education Committee, on the Revision of the Regulations for the Registration of Students, which dealt with a matter whose difficulties are not generally comprehended. Earlier in the year the Committee had been instructed by the Executive Committee to obtain further information in regard to examinations instituted by the various bodies, and this information was attached as an appendix. A feature of the Report was the making clear that University matriculation admitting to the faculties of arts or pure science would be ipso facto recognised, while in other faculties the certificate must bear evidences of passes of the matriculation standard in four specified subjects. The continued recognition of the examinations of the College of Preceptors was justified in the Report by the publication of a letter from the Dean of the College, expressing willingness to modify the requirements of the College in order to bring its examinations into line with those of other bodies. There is no doubt that the College of Preceptors, and equally the Scottish Educational Institute, fill gaps in the secondary education scheme of the countries, and this fact has been properly admitted.

The registration of medical students is not compulsory, and the instructions of the Council are worded as recommendations thus :—

1. Subject to such exceptions as the Council may from time to time allow, every medical student, at the commencement of his studies, should be registered in the manner and under the conditions set forth in the regulations.

2. Before registration as a medical student every applicant should produce evidence that he has attained the age of 17 years.

3. The minimum standard of general education required of applicants is that of a university matriculation or entrance examination in the faculties of arts or pure science. In other faculties the examination must be of the same standard and include the subjects prescribed in the regulations.

4. Before registration as a medical student every applicant should be required to have passed a recognised examination in general education, and, *in addition thereto*, an examination (theoretical and practical) in elementary physics and elementary chemistry conducted or recognised by one of the licensing bodies.

5. A student who has diligently attended an approved course of instruction in elementary biology at a secondary school or other teaching institution recognised by a licensing body may be admitted to the professional examination in elementary biology immediately after his registration as a medical student.

6. The commencement of the course of medical study recognised by any of the licensing bodies should not be reckoned as dating earlier than 15 days before the date of registration.

7. Every person desirous of being registered should apply to the registrar of the division of Great Britain or Ireland in which he is residing, upon a form, copies of which may be had on application to the several licensing bodies, medical schools, and hospitals, or at the offices of the Medical Council in Great Britain or Ireland; and should produce or forward to the registrar evidence that he has attained the age of 17 years, that he has passed a preliminary examination in general education recognised by the General Medical Council, and, *in addition*, an examination (theoretical and practical) in elementary physics and elementary chemistry conducted or recognised by one of the licensing bodies, and that he has commenced medical study.

The regulations set out the provisions for the maintenance of the register, giving lists of recognised examinations conducted by universities and other bodies in Great Britain and Ireland, the Dominions, and foreign countries.

The University students generally register with the Council, but such registration has not been made compulsory in spite of certain conveniences which might attach: the Examining Boards of the Royal Corporations in London apparently do not see any necessity for the proceeding, and the argument that a registration fee would be a source of revenue to the Council has lost its force in recent days, in view of the position in which the finances of the Council now stand. The student who does not register with the Council has, however, to go through exactly the same procedure elsewhere, for no Corporation will admit a candidate to its examinations without similar information to that required by the Council; in Scotland no licensing body will accept a student unless he is registered, and all registered students are accepted by the licensing bodies of the kingdom without question, while the proceeding demands no fee. The candidate has to produce evidence of having passed the necessary preliminary tests before a certain date at the time when he presents himself for his first professional examination with his papers duly signed up for admission, so that the various medical schools see that the names are duly registered with the Corporations. The pattern of the preliminary examinations admitting to the status of medical student is thus not fixed by the Council for every student in the kingdom. We do not suggest that this implies any derogation on the part of any Corporation from the standard set up by the Council; though as long as registration with the Council is not compulsory it is possible for this change to occur. Yet it is intelligible that the Corporations which provide the professional tests and grant the resulting diplomas should desire to control the conditions under which the students, whom they are later to examine for medical qualification, obtain their preliminary training. But it should be remembered that the General Medical Council is in charge, under its constitution and terms of reference, of "the courses of study and examination to be gone through . . . and the ages" of the students, "and generally as to the requisites for obtaining such qualifications," and may request the qualifying bodies for all necessary information thereon. The Students' Register is a convenient record, for the use of the medical schools, of authentic information on the preliminary training of students in the subjects of general education, and for this purpose the coöperation of the licensing bodies is needed.

Annotations.

"Ne quid nimis."

THE NEW YEAR HONOURS.

THE list of New Year Honours includes few medical names, but a good many of those who have been associated with medicine in their public work. Sir Kingsley Wood, the Parliamentary Secretary to the Ministry of Health for the past three years, becomes a Privy Councillor, and Major-General Sir Richard Havelock Charles, late President of the Medical Board of the India Office, receives a baronetcy. Knighthoods are conferred upon Mr. Frederic Hallett, formerly the secretary of the Joint Examining Board of the English Royal Colleges, whose strenuous labours in the systematisation of medical education are thus recognised; upon Mr. Percy Sargent, honorary consulting surgeon to the Ministry of Pensions, whose valuable work on brain and spinal cord injuries is well known; upon Dr. G. W. Badgerow, surgeon to the Hospital for Throat, Nose and Ear, Golden-square, and a recognised authority on his subject; upon Dr. W. J. Wanless, of the American Presbyterian Hospital, Miraj; and upon Mr. A. B. Lowry, the Chief General Inspector of the Ministry of Health. Other names in the list are those of Major-General J. S. Gallie, Deputy Director of Medical Services in the Aldershot Command, who receives the C.B.; Major R. G. Archibald, director of the Wellcome Tropical Research Laboratories at Khartum, who receives the C.M.G.; and Lieut.-Colonel C. L. Dunn, I.M.S., the Director of Public Health, United Provinces, who receives the C.I.E. Honours in the Order of the British Empire are almost confined to women. The C.B.E. has been conferred upon Miss Ellen M. Musson, R.R.C., chairman of the General Nursing Council; the O.B.E. upon Miss Jeannette Halford, founder and hon. secretary of the National League for Health, Maternity and Child Welfare, and Miss Mary Thorburn, R.R.C., matron of the Mental Hospital at Horton, Epsom. The M.B.E. has been conferred upon Miss Margaret Sloan, lately principal matron, Government Medical Department, Hong-Kong; Miss Ada Davies, lady superintendent of the Plaistow Maternity Hospital; and Mrs. F. E. Pearse, inspector of midwives and superintendent of health visitors at Oxford. The Kaisar-i-Hind medal of the first class has been bestowed upon Miss Annie S. Graham, superintendent of the Lady Reading Health School, Delhi, and upon Miss Ellen M. Farrer, medical missionary, the Zenana Baptist Mission, Punjab. The list forms no profuse recognition of medical services rendered to the country, but all will regard the names selected for honour as worthy of public acknowledgment, and we congratulate the recipients thereupon.

DEFAULTING VENEREAL DISEASE PATIENTS.

AMID the other activities, experiences, and opinions recorded in the recent report of the British Social Hygiene Council there is some useful information on the working of legislation designed to prevent the discontinuance of treatment at venereal disease centres. In Great Britain public opinion still seems unprepared for a system of compulsory notification. Locally a step in this direction was taken a year ago in the Bradford Corporation Act. When, however, the Liverpool Corporation Bill this year proposed to make notification compulsory so much opposition was developed that the proposers were obliged to withdraw the clause. Evidently many think that compulsion will merely increase the patient's bias towards secrecy and his reluctance to consult a medical practitioner. Other countries—Scandinavia and Australia, for example—have made trial of legislative compulsion and the working results have been variously estimated. In the British Social Hygiene Council's report, for instance, Dr. Everitt Atkinson describes the experience of West Australia as favourable. He states his belief that there was not a single medical practitioner in the State who failed to notify cases of discontinuance. Defaulting patients, he explains, are not prosecuted immediately. The first step is the sending of a letter personally signed by the Commissioner (the State health officer for the purpose). If this fails the patient is visited—male patients by a health inspector, female patients by a nurse. The majority of defaulters apparently resume treatment when this second step is taken. If prosecution is found essential, it is conducted in the magistrate's room in camera; if the patient thereupon is prepared to go to hospital for the necessary period, the magistrate does not impose a fine; but if the patient leaves hospital without the Commissioner's consent, the prosecution can be reopened and the full legal penalty can be inflicted. The fine, it may be mentioned, is £5 for the first offence, £10 for the second, and £15 for the third. Women, says Dr. Atkinson, take the warnings more seriously than do men; it is therefore found that fewer women are prosecuted than men. Speaking generally, he observes that the legislation has been a success in West Australia and that the syphilis-rate is going down to vanishing-point. On the other hand, as regards the State of Victoria, Dr. E. Robertson is quoted as saying that in 50 per cent. of the cases where discontinuance has been notified, the patient cannot be found, though he points out that this need not mean that none of the defaulters is under treatment. He remarks on the inadequate accommodation for treatment. The only place, it seems, where male in-patients can be detained in Victoria is the prison. As to New South Wales, Dr. R. Dick states that venereal disease is still very prevalent in spite of legislation. He speaks of 6000 or 7000 notifications in the year for a population of 2¼ millions, and he reports the usual difficulty in tracing defaulters. He significantly cites one leading Sydney doctor as having told a recent Royal Commission on Public Health that he had never notified a case. Dr. Dick gives his opinion that the powers given under the Act are valuable in spite of the many difficulties. Their effect in Queensland, where according to the 1927 report which has just come to hand, there were 309 defaulters out of 602 male patients attending the Brisbane clinic, has been that 89 returned after a written request to complete treatment while the police were able to warn 119 although no trace could be found of 74 others, while 22 had left the State. In Great Britain the same difficulties are only too well known and their solution depends upon voluntary efforts. The last annual report of the Scottish Board of Health mentioned the steps taken in Glasgow to follow up defaulters and described the value of visits by nurses. It will be interesting to watch the working of the new German law [1] which has lately come into operation. Like the English statute it enacts that treatment for venereal disease can be given only by doctors. But it goes far beyond the English Act in providing for compulsory notification and treatment and imposing penalties for wilful exposure to infection. It also legalises the sale of prophylactics and it directs the doctor to explain to the patient the nature of his illness.

[1] THE LANCET, 1927, i., 565, and ii., 835.

RADIUM AND BREAST CARCINOMA.

AN interesting contribution to the study of the treatment of carcinoma of the breast with radium has recently been published by Mr. Sampson Handley in America.[1] Mr. Handley's theory of "centrifugal permeation" by carcinoma cells is well known, and this theory involves the belief that infection of the parasternal lymph glands proceeds coincidently with infection of the axillary lymph glands. It is possible to excise the latter, but the former are not accessible. Mr. Handley has therefore made it his practice during the last six years to insert radium tubes above the first rib and into the upper three intercostal spaces as a prophylactic measure in every primary operation for carcinoma of the breast. If the parasternal glands are not infected at the time of operation the radium treatment is superfluous; if the carcinoma has already reached the mediastinal glands, it is inadequate. If, however, the infection has reached these glands and not yet gone further, Mr. Handley believes that the use of radium will materially improve the patient's prospects, and claims that he has himself had better results since he adopted this procedure. He has also proved microscopically that destruction of carcinoma in a parasternal gland can be produced by radium. In only a single instance in the series did recurrence of carcinoma take place in an intercostal space which had been thus "protected" by radium. It is urged that this prophylactic treatment ought to be used as a routine with operations for carcinoma of the breast.

[1] Surgery, Gynecology, and Obstetrics, December, 1927, p. 721.

PENETRATION OF DAYLIGHT INTO BUILDINGS.

FROM the point of view of school-children and from that of clerical workers this is a matter of primary importance in relation to eyesight. A brochure issued by the Department of Scientific and Industrial Research [2] is an attempt to put the subject on a scientific footing. Weather conditions in this country are so variable that it is of little use to attempt to estimate the amount of daylight which is likely to enter a room through the window. What can be done is to define for any given spot in a given room approximately what proportion of the light that enters the room through the window is available at that particular spot. For this purpose certain technical terms are used. The "sill ratio" is the percentage of the illumination of a horizontal surface placed on the window-sill of the room, all external buildings or other obstruction being supposed removed that falls on any particular surface. The "grumble point" is what is found by experience to be the minimum tolerable value of sill ratio. The "no sky contour" marks off that portion of a room from which the direct view of the sky is visible from that from which it is not. For estimating these matters several more or less arbitrary assumptions have to be made. The amount of light reflected from the sky is an "average" amount. Average weather is taken to be weather in which the illumination of a horizontal card on an unobstructed window-sill is 250 foot candles. Since in towns there is always some obstruction the value of the light reflected from dull surfaces and whitewashed surfaces respectively has to be estimated. It is said that a sill ratio of 0·4 per cent., equivalent to 1 foot candle, is just tolerable. In the elementary schools that have been approved no desk is placed

[2] Penetration of Daylight and Sunlight into Buildings, Department of Scientific and Industrial Research, Illumination Research Technical Paper No. 7. H.M. Stationery Office. 1s.

in a less favourable position than one having a sill ratio of 1 per cent., or 2½ foot candles. Whether or not from a position in the room there is any direct view of the sky is a specially important point. Otherwise the other conditions have to be specially favourable for the lighting to be considered adequate. Architects and others will do well to study this subject, and it is well that some sort of quantitative estimation of lighting should be undertaken for their benefit, but they must bear in mind that a standard which for the normal-sighted is just tolerable, for the weak-sighted would be intolerable. A point well brought out in the brochure is the comparatively low value of the light reflected from the walls, roofs, &c., that obstruct a direct view of the sky. We have here, in fact, something like a scientific justification of the legal doctrine of "ancient lights."

REFECTION.

A REMARKABLE phenomenon has been observed independently by L. S. Fridericia[1] and his coworkers at the University Institute of Hygiene, Copenhagen, and by H. Chick and M. H. Roscoe[2] at the Lister Institute. Both these sets of workers, when experimenting with rats on diets deficient in vitamin B, found that in certain circumstances the animals began to pass large white fæces, and that when this occurred all symptoms of vitamin B deficiency were suppressed, and the rats throve and grew indefinitely; whilst animals which did not form the white fæces declined and succumbed to the deficiency in the ordinary way. Fridericia has given to this phenomenon the convenient name of "refection," and has made a very considerable study of it; the investigations of Roscoe are not so extensive, but she confirms Fridericia in a great many points and extends his observations in a few important ones. Fridericia found that the phenomenon of refection only made its appearance in a few of the rats when a number were placed on the deficient diet, but that if the white fæces from the spontaneously refected rats were fed for a few days to others on the deficient diet these latter also became refected and might remain so indefinitely; any refected rats might, on the other hand, temporarily or permanently relapse. The fæces retained the power of inducing refection when kept in the dry state for at least 5½ months. The agent, or, as Fridericia calls it, the virus of refection, would not pass the pores of a Berkefeld or of a Chamberland filter; it was destroyed when heated to 100° C. for 10 minutes, but not when heated to 80° C. for 10 minutes. The white colour of the fæces was found to be due to undigested starch, but they did not include the whole of the ingested starch, some of which was digested. The starch grains were found to be resistant to the amylase which is present in the fæces, but this amylase was able to digest ordinary starch grains; and it seems that something was adsorbed upon the starch grains which protected them from the action of the amylase; the protective agent was soluble in acid alcohol. The white fæces contained considerable amounts of vitamin B, in contrast with brown fæces which contained little or none. When rats showing refection were fed on a diet containing vitamin B, the failure to digest the starch disappeared, and it was impossible to induce refection in rats on a complete diet by adding white fæces from refected rats to their food. When carbohydrate other than starch was given to rats already refected, a decline in weight began at once, but seemed to go on more slowly than if the rat had never been refected. Fridericia advances no definite theory, but he evidently believes that vitamin B is produced in the intestinal tract of rats by the growth of a virus other than an ordinary intestinal denizen, and that the presence of undigested starch grains in the fæces is a necessary concomitant. As to the function of the starch, he hazards no conjecture.

Roscoe confirms Fridericia in his main argument, agreeing that the condition occurs spontaneously in a few only of the rats on the deficient diet, that it can be transferred to other rats by feeding them on the white fæces, and that undigested starch is present in the fæces, causing the white colour. But she clearly shows what is only inherent in Fridericia's work—that refection replaces either or both parts of the vitamin B complex in the deficient diet. This is important, as it is hardly possible to imagine that both parts of vitamin B, in the absence of which neuritic and pellagra-like symptoms develop, can be dispensed with from the diet in any other way than by the formation of these two parts by some organism in the intestine, a view which is particularly supported by Fridericia's observation that there is more vitamin B in the white fæces than in the dark ones. Unlike Fridericia, Roscoe was able to observe refection in rats which were receiving both fractions of vitamin B, and when the fractions were withdrawn the rats, being refected, remained in health. She also noticed that refected rats, when caged upon wire grids of very wide mesh, so that the fæces fell through the moment that they were passed, ceased to be refected and might die or might recover again. As it was seen that rats could actually learn to catch their fæces the moment they were passed and consume them, it was concluded that coprophagy was necessary to the continued maintenance of refection. She found that refection was impossible if there was no starch in the diet, and that it was absolutely prevented if the starch was first cooked, so that every starch grain was thereby burst.

The connexion of the condition with the presence of unbroken starch grains is thus confirmed by Roscoe's work, though she too offers no explanation of the connexion. Her results are not incompatible with a conjecture that the persistence of the unbroken starch grains is in some way conditioned by the growth of an organism which generates vitamin B in the intestinal tract, but if that is so it is not clear why refection does not always occur. Possibly only some kinds of starch are suitable or only some carry the "virus." Both Roscoe and Fridericia used rice starch only, but it is of interest to note that C. Eijkman[3] many years ago found that potato starch had some special action in preventing the outbreak of polyneuritis among pigeons where other kinds of starch had no such action. Also M. A. Boas[4] has found that arrowroot and potato starches, in contrast with some cereal starches tried, are peculiarly effective in preventing the condition of malnutrition which she has found to develop in rats fed on certain diets containing dried egg-white.

[1] L. S. Fridericia, P. Freudenthal, S. Gudjonsson, G. Johansen, and N. Schoubye: Jour. of Hygiene, 1927, xxvii., 70.
[2] M. H. Roscoe: Ibid., p. 103.

AN INTERNATIONAL COURSE IN PUBLIC HEALTH.

THE continuation course in public health, which came to an end just before Christmas, was an unqualified success, and the Health Section of the League of Nations may congratulate itself on having made a practical contribution to the health of nations. Delegates came to London from Brazil, the Crown Colonies, Czecho-Slovakia, France, Germany, Hungary, Iceland, Northern Ireland, the Irish Free State, the Netherlands, Norway, Scotland, Sweden, Switzerland, the United States of America, and Yugoslavia. The inclusion among the delegates of representatives from the British Empire proved of value to both home and foreign participants, permitting as it did a much more free and intimate exchange of views and experiences than would have resulted from formal lectures and discussions. Arrangements were in the hands of the Ministry of Health and of the Society of Medical Officers of Health, and procedure took the form of

[3] C. Eijkman: Virchows Archiv, 1897, cxlviii., 523.
[4] M. A. Boas: Biochem. Jour., 1927, xxi., 712.

lectures by eminent British and foreign authorities on a wide range of public health subjects, of discussions with the speakers, and of individual and collective tours of inspection to institutions or works of hygienic interest.

Sir George Newman's introductory lecture demonstrated the antiquity of British public health administration, founded upon the roads and baths of the Roman occupation, the Domesday Book and the Gilds, science and social reform combining to produce administrative action. A comprehensive review of national health insurance schemes in Europe, given by Dr. A. Foramitti (Austria), showed how efficiency in public health administration connotes efficiency in health insurance work. Dr. J. Smith Whitaker, on the other hand, attributed to the general practitioner the success of the British scheme, stimulated indirectly only by public health machinery. Industrial hygiene was dealt with by Prof. G. Y. Giglioli (Florence) and Dr. J. J. Buchan (M.O.H., Bradford), the former in a historical review pointing out that the retrograde influence of the Great War was counterbalanced by the introduction of physiological methods, the latter discussing the question of light, ventilation, and temperature in industry in relation to the employer and employee. Dr. T. H. C. Stevenson (General Register Office), in a paper on the national vital statistics of this country, described what may prove to be the first definite clue to the solution of the problem of cancer when he showed that grading in regional sites from the skin to the pylorus indicated that cancer was a social condition. That the recently instituted clean milk competitions had done more to educate the milk industry in the meaning of bacterial purity than have 50 years of inspection was a notable pronouncement of Dr. A. W. J. MacFadden (Ministry of Health) in a detailed discourse on the hygiene of milk. An instructive account of the legislation safeguarding food-supply was given by Dr. C. Porter (M.O.H., Marylebone), his remark that the good food regulations of foreign countries had resulted from British insistence meeting with no criticism from the foreign delegates. Prof. F. Neufeld (Robert Koch Institute, Berlin) described recent research work on tuberculosis and its application. He considered that dried dust was a very much more important means of spread than wet droplets; that bovine bacilli played no rôle in pulmonary tuberculosis; that large doses of bacilli are required to produce the disease, and that a filtrable form of tubercle bacillus was a very unlikely primary organism if it existed at all. Prof. C. Pirquet (Vienna) emphasised the importance of a little surplus of food—his only therapeutic measure—in the treatment of tuberculosis. Sunlight acted merely as an adjuvant in the immunising process by stimulating the appetite. The lectures on immunity and infection by Prof. Carl Browning (Glasgow), Prof. W. W. C. Topley (London School of Hygiene), and Surgeon-Commander S. F. Dudley embraced the problems of fluctuation in virulence and in susceptibility, velocity of infection, and herd immunity. The present position of chemotherapy from the clinical point of view was a subject in which Prof. B. Nocht (Hamburg) provoked deep interest, especially on the part of those interested in tropical medicine. Mr. K. Stouman's (League of Nations) paper on the geographical distribution of epidemic diseases demonstrated the great international importance of the health work of the League. His statement that the world was probably on the verge of an increase in the incidence and virulence of diphtheria received ample support in ensuing days from speakers from different parts of the globe. An honest and clear account of the present position of the problem of nutrition was given by Prof. E. P. Cathcart (Glasgow). In a series of four lectures Prof. Haven Emerson (New York) described the progress and present position of public health administration in America, perhaps one of his most outstanding remarks being that New York had now done all that could be done by isolation, quarantine, and therapeutic measures to counteract diphtheria, and that if a further fall in incidence was desired immunisation of children under one year of age must be undertaken and practised as commonly as small-pox vaccination. Lectures by Sir George Buchanan, Dr. F. G. Boudreau, and Dr. Norman White on the work of the League fittingly concluded the course. Fifty-two lectures in all were delivered, and in a brief résumé such as this it is impossible to do more than single out here and there some of the more salient items. The hope of the participants that the lectures should be reprinted in book form is one which we cordially endorse.

Visits of inspection were paid to the many institutions which make London such a desirable centre for a hygienic survey. The places visited included the Ministry of Health, metropolitan schools, the port sanitary authority, milk-supply depôts, Lord Mayor Treloar's Home for Cripples at Alton, a study of rural hygiene in Bedfordshire under the guidance of Prof. H. R. Kenwood, the Royal Sanitary Institute, the Institute of Tropical Medicine and Hygiene, and the laboratories of the Metropolitan Water Board. The physical and mental fatigue of six weeks' intensive study may have left the foreign participants in the course a little limp, but they were unanimous in recognising the value of the opportunity they had been afforded of getting to know the problems, the shortcomings, and the successes of their colleagues' countries and thus of acquiring a broader outlook on national health.

AN INDIAN REMEDY AGAINST DYSENTERY.

A STUDY of the pharmacological and therapeutic actions of *Holarrhena antidysenterica*, a small deciduous tree widely distributed throughout India and Burma, has recently been undertaken by Rev. Father J. F. Caius and Dr. K. S. Mhaskar, and the results published in an Indian Research Memoir. Since both the bark and the seeds of this plant have been, and continue to be, among the most important medicines of the Hindu materia medica, being used extensively in the treatment of all forms of indigestion, of dysentery, and of disorders of the lungs, there existed a need for an investigation of their biological properties by modern methods of research. This the authors have undertaken with the following result. A 1 : 5 decoction of the powdered seeds was found to have no antiseptic value when tested by its effect on the growth of colon and typhoid bacilli. It produced an increase in the tone of the plain muscle of the gut and uterus of the guinea-pig and rabbit, and the powdered seeds in doses of grs. 15 to 60 a day led to a definite clinical improvement in 57 per cent. of the cases of amœbic dysentery, in 22 per cent. of the cases of non-amœbic dysentery, and in 61 per cent. of the cases of non-dysenteric diarrhœa investigated. The seeds contained a relatively high percentage of oil, but the pharmacological agent responsible for the effects observed was not concentrated in this oil. The bark was next subjected to experiment with the result that decoctions of this were found to give pharmacological and therapeutic reactions essentially similar to those produced by decoctions of the seeds of the plant. The bark constitutes the principal medicine for dysentery in the Indian Pharmacopœia, and Indian writers are unanimous in recommending this drug. "Accordingly," it is stated, "the Indigenous Drugs Committee decided to determine the place of the bark of *Holarrhena antidysenterica* in the treatment of dysentery . . . 30 patients were treated, of whom 26 were either cured or improved." Results almost as satisfactory as these were obtained by the authors, in that 51 out of 67 cases of amœbic dysentery, 37 out of 55 cases of non-amœbic, and 9 out of 20 cases of non-dysenteric diarrhœa were definitely improved. It will be observed that these results are somewhat better than those obtained from the use of the powdered seeds, and in this connexion it is to be noticed that the authors found a much larger amount of the alkaloid conessine in

the bark than in the seeds of holarrhena. This alkaloid was extracted from the bark and its pharmacological action investigated. The results confirm on the whole those of previous workers, and the drug was found to be effective in some cases of dysentery. The question arose as to whether this alkaloid was the essential agent in producing the good resulting from the treatment of dysentery by the bark and seeds of the plant. It has been shown recently by R. N. Chopra, J. C. Gupta, J. C. David, and S. Ghosh that conessine has a specific action on *Entamœba histolytica* obtained from the stools of infected kittens, being even more active in killing this parasite than is emetine. Although we must assume that the alkaloid is largely responsible for the beneficial effects of the crude drug, yet the results of Caius and Mhaskar show that the effects of administration of the seeds or bark to cases of dysentery are not entirely explicable on this hypothesis, since "the smallest therapeutic dose of free alkaloid is quite out of proportion to the amount of combined alkaloid present in the optimum doses of either the seed or the bark—30 to 1 in the case of the seed and 2 to 1 in that of the bark." The conclusions arrived at by the authors as the result of their study are that the antidysenteric value of holarrhena compares favourably with that of any of the medicines now in vogue, that its antidiarrhœal properties are not dependent on one chemical constituent in particular but on the entire seed or bark, and that it affords a safe, cheap, reliable, and easily administered drug for the treatment of diarrhœal troubles. They recommend the daily administration of grs. 60–120 of the powdered bark in three to four portions. Results of real value to medicine are likely to accrue from studies of Indian medicinal plants such as those undertaken by the authors of this memoir, and the Indian Government may be congratulated on initiating such a line of research.

THE SNOW.

THE snow has come and gone, at all events in southern England, leaving a tale of hardship and adventure which will take the place for the present generation of the great snowstorm of 1881 for the past. Snow fell on Christmas evening in no very remarkable quantity, for nowhere was there an average of more than a level foot in depth—equivalent as everyone knows to an inch of rain—but the continuous gale from Nova Zembla or thereabouts gave no peace to the falling flakes which drifted before it until they could find rest in some hollow or other, whether railway-cutting, country lane, or domestic backyard. Our legal correspondent has dealt elsewhere with the mischief produced on the public highway; it is the domestic aspect with which we are here concerned. Falling snow offers a very convenient dumping-ground for things which one wants to be rid of, and it attracts tenants of the poorer types of house to throw into it rubbish which should go into the dustbins. Even on roads which are normally free from rubbish the snow soon becomes foul, while stall-holders in open markets frankly regard the snow as a pretext for being more than ordinarily careless with their trade refuse. Anyone who has seen the backyards of a snowbound village thaw out in the spring will realise that they tell a fairly accurate story of the habits of the local housewife, and, as the larder is rightly placed on the sunless aspect of the house, it is in its immediate proximity that the snow persists longest and the accumulation of dirt and unconsidered trifles is most conspicuous. Street hygiene did not suffer in London itself as much as might have been expected. Surveyors were careful, while snow was still falling, not only to clear a central passage for traffic, but also to keep the gutters clear, and the removal of house refuse was affected only to a limited extent. In many London areas motor vehicles are used for its removal and the difficulty is thereby reduced to a minimum. The effect on the general street cleansing is that the removal of snow replaces the more ordinary street sweeping, and in London the duty of clearing both carriageways and footways devolves on the local authority. When rock salt is used to facilitate the clearing as little as possible is applied, and the roads are washed by means of hose and water vans as soon as the thaw sets in. Local Government Board by-laws of 1877 provide that where salt is used for the purpose of facilitating the removal of any snow from any footway or pavement, the whole of the deposit resulting from the mixture shall forthwith be effectively removed. The effect of a temporary suspension of street cleansing would not appear to have any serious consequence, except that the presence of litter and refuse in the streets is unattractive. During the war in a central London borough with much vehicular traffic, the street-cleansing staff refused service for a period of three or four weeks during which very little cleansing of the thoroughfares could be effected. Efforts were, of course, made to secure temporary labour; volunteer women were employed and even the borough surveyor took a turn with the broom; but these efforts were comparatively small in their effect, and the refuse was left more or less undisturbed through the strike period, yet no ill-effect on health is known to have occurred.

SMOKING AND THE STOMACH.

THE latest reflections on tobacco-smoking may be found on p. 14 of our present issue, where Prof. Hugh MacLean and his colleagues suggest that "the profession as a whole hardly realises the excessively detrimental action of tobacco on the deranged stomach." Their belief in its evil effects, though presumably based on clinical observation, can find a good deal of support in the records of experiment. In a recent lecture [1] Prof. W. E. Dixon, after remarking that the commonest symptoms of smoking are loss of appetite and chronic intestinal catarrh, said that "nicotine and tobacco-smoking, by stimulating the autonomic ganglia, increase the secretion of the alimentary glands and later, after the smoking has ceased, depress them." Injections of saline through which smoke has been passed produce in dogs a decided increase in the flow of gastric juice, and "it is well recognised that in certain persons excessive smoking leads to this gastric hypersecretion." Prof. Dixon quotes F. Wagner as insisting that excessive smoking can produce all the subjective and radiographic appearances of duodenal ulcer, but Sir Humphry Rolleston [2] says that this tobacco dyspepsia is rather rare, being attributable probably to pyloric spasm. He points out, however, that with oral sepsis excessive salivation due to smoking may set up gastritis, and states that after a short period of increased contractility the stomach becomes paralysed under the influence of tobacco, the paralysis lasting perhaps an hour. Though these facts lend force to Prof. MacLean's plea that smoking should be forbidden to patients whose stomachs are struggling back to health, it remains uncertain whether tobacco plays an important part among the processes which cause gastric ulcers and neuroses. That it does so has often been asserted, and its action is invoked to explain the greater incidence of ulcer in men than women. The hypothesis is (to smokers) unattractive, and is fortunately not supported by the results of a small statistical study [3] that Dr. C. W. Barnett has been making at the Peter Brent Brigham Hospital in Boston. From their case-histories Dr. Barnett classified into smokers and non-smokers all the male patients with gastric or duodenal ulcer or gastric neuroses treated at the hospital from 1913 to 1926. In all there were 312 cases with a complete history, and for comparison 500 patients of similar age were selected from the general admissions. No difference

[1] THE LANCET, 1927, ii., 881.
[2] THE LANCET, 1926, i., 961.
[3] Boston Medical and Surgical Journal, 1927, cxcvii., 457.

of any importance was found between the proportion of smokers among the cases of peptic ulcer or gastric neurosis and among the controls, nor was the mean age of admission of the cases of gastric or duodenal ulcer different among the smokers or non-smokers. From this evidence, then, so far as it goes, no case against smoking can be made out. Clearly, however, the evidence does not go very far, and as Dr. Barnett points out, nothing was known about the *amount* of smoking, and the possibility of excessive smoking leading in some cases to peptic ulcer is not precluded, though not indicated by his investigation. Now that tobacco is taking the place of alcohol as the popular drug of addiction it has become very important to know the truth about these matters.

VLADIMIR BECHTEREV.

THE death on Christmas Day of Vladimir Mikhailovich von Bechterev in his seventy-third year should not remain unnoticed, for he occupied for many years the chair of psychiatry and nervous diseases at St. Petersburg, and his many contributions to neurology and anatomy are lasting witness to his scientific foresight and painstaking thoroughness. His name is specially associated with the pioneer experiments with cerebellar stimulations that first opened up an avenue of exploration along which modern investigators are still travelling. He was among the first to suggest an anatomical representation within the cerebellum of the body segments. His anatomical researches on the peripheral and central connexions of the acoustic nerve are equally familiar. In 1884 Bechterev, in the course of his experimental work, observed forced movements resulting from stimulation of the base of the forebrain in animals, suggesting to him the possibility of vestibular centres in this region. The following year he determined, with Flechsig, the peripheral distribution of the roots of the acoustic nerve; a year later he and Edinger, working independently along embryological lines, demonstrated the central terminations of this nerve. Bechterev contended that the anterior root of the vestibular nerve does not arise from the dorsal nucleus, but rather from cells situated in the vicinity of Deiter's nucleus—and in fact the nucleus angularis still bears his name. Other anatomical researches which are associated with him include the demonstration of the central tegmental tract, which descends in the neighbourhood of the inferior olive, and the line of Kaes and Bechterev, which forms part of the supraradiary zone of the cortex. Clinical neurology also is the richer for his work, and to-day the nasal reflex and the reflex of the dorsum of the foot are still coupled with his name. In 1893 he described, as a variety of chronic rigidity of the spine, a condition of vertebral ankylosis with root signs, of heredo-traumatic origin—a syndrome known to medical dictionaries as Bechterev's disease. Bechterev was born at Vyatka on the slope of the Ural Mountains, and although he studied for periods at Leipzig and Paris he spent the whole of his active life in Russia. To posterity his name will certainly rank with those of Ferrier and Hitzig as a pioneer of experimental neurophysiology.

INDEX TO "THE LANCET," VOL. II., 1927.

THE Index and Title-page to Vol. II., 1927, which was completed with the issue of Dec. 31st, is now in preparation. A copy will be sent gratis to subscribers on receipt of a post-card addressed to the Manager of THE LANCET, 1, Bedford-street, Strand, W.C. 2. Subscribers who have not already indicated their desire to receive Indexes regularly as published should do so now.

HARVEIAN SOCIETY.—The annual general meeting of this society will be held on Thursday, Jan. 12th, at 8.30 P.M., at 11, Chandos-street, London, W.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Lt.-Comdr. H. F. Stephen to be Surg. Comdr.

Surg. Lt.-Comdrs.: F. G. Hunt to *Tamar* for Hong-Kong Dockyard; and F. H. Vey to *Victory* for Portsmouth Dockyard.

Surg. Lts.: D. Duncan to *Vernon*; J. H. Nicolson to *Tiger*, temp., and to *Cornwall* (on commg. with full complement); and S. G. Weldon to *Alecto*, temp.

Surg. Lt. (D.): A. W. Wallace to *Victory* for R.N. Barracks, Portsmouth, temp.

ROYAL NAVAL VOLUNTEER RESERVE.

Surg. Comdr. H. L. Murray to be Surg. Capt.

Surg. Sub-Lt. T. A. Brand to be Surg. Lt.

ROYAL ARMY MEDICAL CORPS.

Lt.-Col. C. R. Sylvester-Bradley is placed on the half-pay list on account of ill-health.

Maj. and Bt. Lt.-Col. G. De la Cour, from a Professor, Royal Army Medical College, is granted the rank of Temp. Col. whilst empld. as Consulting Surgeon to the British Army.

Col. R. H. Lloyd, late R.A.M.C., is placed on half pay.

Lt.-Cols., from R.A.M.C., to be Cols.: E. McDonnell and Bt. Cols. A. H. Safford and J. W. West.

Cols., late R.A.M.C., retiring on retd. pay: G. M. Goldsmith and H. D. Packer.

Col. H. H. S. Morant, having attained the age for compulsory retirement, is placed on retd. pay and is granted the hon. rank of Brig.-Gen.

Lt.-Col. A. McMunn, having attained the age fixed for compulsory retirement, retires on retd. pay.

Majs. to be Lt.-Cols.: N. Low, A. N. Fraser, and R. H. L. Cordner.

Capt. G. T. Gimlette to be Maj. (Prov.).

Temp. Lt. O. A. Owen-Flood (Lt., Reg. Army Res. of Off., R. Ir. Fus.) relinquishes his temp. commn.

ARMY DENTAL CORPS.

Capt. H. H. Mallet to be Maj.

The undermentioned to be Lts. on prob.: N. I. Macmillan, W. P. Baxendine, A. K. Inglis, W. McD. Birse, and R. G. J. Tovey.

TERRITORIAL ARMY.

F. MacD. Walker to be Lt.

Hygiene Companies: Lt. C. M. Willcox, late R.F.A. (Spec. Res.), to be Lt.

ROYAL AIR FORCE.

Half-yearly Promotions: Wing Comdr. E. C. Clements to be Group Capt. Flight Lt. (Acting Squadron Leader) J. N. MacDonald to be Hon. Wing Comdr.

INDIAN MEDICAL SERVICES.

Capt. E. Kean resigns his commn.

Temp. Capt. C. L. Katial relinquishes his temp. commn.

Lt.-Col. W. H. C. Forster has been appointed Inspector-General of Civil Hospitals, Burma. Dr. E. Heath is to act as Lady Inspector of Factories. Dr. Fred Barretto has been confirmed as Officer in Charge, Public Health Laboratory, Poona. The services of Lt.-Col. G. W. Maconachie have been placed at the disposal of the Government of India for appointment as Inspector-General of Prisons, Bihar and Orissa. Lt.-Col. F. Stevenson has been posted as Residency Surgeon, Kashmir. Lt.-Col. A. Cameron, civil surg., has been posted to Agra; Lt.-Col. J. F. Boyd, civil surg., to Aligarh; Maj. G. T. Burke, civil surg., to Jhansi; Maj. E. G. A. Mathews, civil surg., from Aligarh to Hardoi; Dr. Gauri Nath, officiating civil surg., from Hardoi to Ballia; and Dr. Har Prasad Bajpai, officiating civil surg., from Jhansi to Hamirpur. Lt.-Col. W. A. Mearns is to resume the duties of Assistant Director of Public Health. Lt.-Col. J. Anderson has been posted as Civil Surg., Sibi. Dr. M. V. Webb, Principal, Women's Medical School, Agra, and Acting Senior Medical Officer, Women's Medical Service, and Secretary, Dufferin's Council, Countess of Dufferin's Fund, has made over charge of the office of the latter to Dr. A. C. Scott.

The Secretary of State for India has approved the grant of vacant Good Service Pensions to Lt.-Cols. W. Coates, I.M.S., retd., and C. J. McCartie, I.M.S., retd.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CCLVII.—TREATMENT OF ILEUS FOLLOWING OPERATIONS.

ILEUS or intestinal obstruction secondary to operation may be of two types—paralytic, when it results from failure of peristaltic action, and mechanical when it is due to some organic block of the bowel.

Paralytic Ileus.—In this variety there is paralysis of some portion of the intestine and the effect may be transitory. Such ileus may follow the reposition of large strangulated herniæ, but the most important cause of all is acute peritonitis either localised or diffuse. In this condition the intestine becomes inflamed and is unable to propel its contents.

In *mechanical ileus* the intestine may be strangulated or kinked by bands or cords, the result of peritoneal adhesions following operation, or a tear in the omentum or mesentery made by operative trauma may lead to intestinal obstruction. Ileus may also be produced as the result of cicatricial contracture affecting the wall of the bowel following an artificially made anastomosis.

Mortality.

The mortality from acute intestinal obstruction has fallen very little during recent years. The death-rate after operation in early cases is not less than 20 per cent., whilst in any large collection of cases it may reach 50 per cent. It seems to be generally agreed that the high and rapid mortality in obstruction of the small intestine is due to the absorption of toxic material developed within the bowel. Evacuation of the bowel contents is therefore of first importance, but restoration of peristalsis is also essential for recovery. If the bowels can be made to act the patient frequently recovers, whilst if they fail to act, he will die. In the late stages of fatal cases of acute peritonitis paralytic obstruction develops and this is largely responsible for the symptoms of toxæmia. The most common cause of peritonitis met with by the general surgeon is acute appendicitis. Of cases dying of peritonitis 5–10 days after operation for appendicitis probably 75 per cent. are due to intestinal obstruction, which is a most difficult and dangerous complication. If intestinal obstruction does not supervene peritonitis often yields to treatment.

The treatment of paralytic ileus has always been unsatisfactory. The efficacy of drugs such as castor oil, calomel, eserine, or pituitary extract depends on contraction of the bowel. If the bowel is paralysed these drugs will fail to act and will add to the strain on a heart already damaged by toxæmia. Enterostomy in the paralysed bowel in such cases only drains the affected loop, and therefore is of but limited value. It is, therefore, apparent that in cases of paralytic ileus attempts to stimulate peristalsis in the bowel should be avoided. The most effective measure is to give it complete rest, and thereby a chance to recover its power of active contraction. This treatment, combined with an enterostomy above the affected portion of the bowel, does undoubtedly prove successful in many cases. Enterostomy is an easy and quick operation and makes little demands on the patient's vitality. In addition, glucose and sodium bicarbonate can be run into the bowel and is absorbed better than from the rectum or elsewhere. The toxins are thus diluted, and this process is of distinct advantage to the patient.

Clinical Features.

Post-operative ileus is usually seen at two periods after operation—early, within the first two or three days, or later during the convalescent period. The treatment to be adopted will depend on the stage at which the condition arises. The management of early cases arising after operations for peritonitis due to acute appendicitis presents a most anxious and difficult problem. These cases are usually due to multiple kinking of inflamed bowel by plastic lymph. This condition chiefly affects the lower ileum, having been set up by perforation of a gangrenous appendix. The bowel becomes acutely inflamed and then paralysed by extension of the inflammation to the muscular wall. Death in these cases is due to intestinal obstruction and not to peritonitis. The clinical picture is fairly typical. The patient shows little or no improvement after operation, and the abdominal distension becomes more marked; vomiting is progressive and enemas produce no satisfactory result. About the fourth or fifth day after the operation the signs of intestinal obstruction become well marked and further operation is then essential.

Enterostomy.

When obstruction develops shortly after operation it is rarely complete and the intestine will not infrequently recover its function if given a reasonable chance. In these cases all nourishment by mouth must be entirely stopped so as to avoid further overloading of a distended bowel. Fluids should be given freely by the rectal and subcutaneous routes. Where vomiting is troublesome gastric lavage is valuable, and can be repeated as often as necessary. Morphine in doses of gr. 1/6 gives relief from pain, and in spite of apparent contra-indications will be found useful.

If improvement does not follow this treatment in about 48 hours operation will be necessary. This involves drainage of the small intestine by an enterostomy above the site of obstruction and above the level at which the bowel is paralysed. It is an extremely easy procedure and should be carried out by the following method.

Technique.—A local anæsthetic (2 per cent. of novocaine) is used. A left paramedian or rectus splitting incision just above the umbilicus is made, and the first distended loop of intestine that presents is withdrawn into the wound. This is clamped after it has been emptied, and a tube or large catheter with a terminal opening is sutured into the bowel by Witzel's method. According to this method the tube is laid for 3 or 4 inches along the bowel, and the serous and muscular coats sutured over it. The tube is then brought out through a gap in the omentum and the wound closed round it. This enterostomy of the valvular type will close when the tube is removed without the necessity of a second operation. The intestine will empty itself of its toxic contents through the enterostomy, and irrigation with sodium bicarbonate can also be carried out.

This is the easiest and safest procedure to adopt when the patient is in a poor condition. It is often a life-saving measure and will tide the patient over an apparently hopeless condition. After the intestine has emptied itself through the tube the lumen of the bowel is usually restored and the contents begin to pass normally. The tube can then be removed and the fistula will close spontaneously.

Ileus Duplex.

Sampson Handley has described under the name of ileus duplex a condition where there is paralysis of the bowel below the level of the pelvic brim—that is, in the lower coils of the ileum and the terminal portion of the colon. He recommends as treatment for this condition short-circuiting of the ileum by a jejuno-colostomy with drainage of the large bowel by a cæcostomy. This operation would appear rather severe in a patient whose condition is desperate. Enterostomy is a quicker and simpler operation and can readily be performed by any surgeon with far less strain on the patient.

Mechanical Ileus.

Patients may develop symptoms of intestinal obstruction any time after the tenth day following operation. At this period the obstruction is due to fixation of the bowel by adhesions, and an operation to separate the adhesions and free the bowel will always be necessary. If it is thought desirable, an

enterostomy may be added to drain the bowel for a few days. The outlook in such cases is fairly good provided that operation has not been unduly delayed.

Anti-gas Serum.—It has been suggested that the severe toxæmia of acute ileus is due to the presence of the toxins of the *B. welchii* in the fæcal contents of the bowel above the site of obstruction, the absorption of this toxin by the damaged mucosa leading to the grave general condition of the patient. The symptoms certainly resemble those seen in cases of gas gangrene. The natural outcome of this suggestion was the administration of anti-gas serum to patients, and this has been tried by B. W. Williams[1] during the past two years with encouraging results and noteworthy reduction in the mortality-rate. A prophylactic injection of serum before operation may lead to still better results. The initial dose of serum should be 80 c.cm. given intramuscularly, and later 40–80 c.cm. should be given daily intramuscularly until the bowels are acting effectually.

Administration of Bile.—More recently R. St. L. Brockman[2] has suggested that the symptoms which develop in cases of intestinal obstruction are for the most part due to the prevention of the passage of the bile along the alimentary canal. The administration of bile by the rectum has given encouraging results, the vomiting and toxæmia being diminished in some cases. The dose given was human bile 2 oz. in 4 oz. saline per rectum every four hours and relief was almost immediate. The toxic symptoms may be further controlled by the use of hypertonic saline given intravenously. A quart of 3 per cent. saline given before and again after operation gives favourable results.

Spinal Anæsthesia.—Spinal anæsthesia may be regarded as a valuable alternative to general anæsthesia in cases of intestinal obstruction. This anæsthetic gives perfect relaxation and allows manipulation of the distended coils of bowel to be carried out with great ease. Not infrequently, after the injection of a spinal anæsthetic, the bowels act spontaneously on the operating table, and such injections have been suggested as a line of treatment in cases of paralytic ileus.

Preventive Treatment.

With the practice of earlier operation for acute appendicitis the number of cases where post-operative ileus arises is likely to decrease. This probability is sufficient reason for immediate operation in acute appendicitis as soon as the diagnosis is clear. If the appendix can be removed before it has perforated ileus will not arise. The avoidance of a drainage-tube is an important factor in preventing the formation of post-operative adhesions, for intestinal obstruction is far more common when a drainage-tube has been used. In some cases of acute appendicitis the presence of ileus may be recognised before or actually at the time of operation, and for this reason an adequate incision is necessary to enable the lower ileum to be inspected. For this purpose either the paramedian or the Battle incision is to be recommended. After the appendix has been dealt with the condition of the ileum is examined. If it is fixed by recent adhesions it is gently freed and its mobility restored. Where the gut appears inflamed, sodden and apparently paralysed, either an enterostomy or ileo-colostomy and cæcostomy as advised by Handley should be performed. The early administration of purgatives should be avoided after operation for acute appendicitis. In the treatment of strangulated intestine following hernia operations, a lateral anastomosis to short-circuit the damaged loop is often a valuable procedure where the condition of the bowel is doubtful. Finally, a further cause of ileus after abdominal operation is the over-purgation of patients prior to operation, and the use of castor oil, which causes severe intestinal irritation, should be avoided.

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[1] THE LANCET, 1927, i., 907.
[2] Ibid., 1927, ii., 317.

Special Articles.

OBSERVATIONS CONCERNING THE PRESERVATION OF LIFE IN SHIPWRECKED INDIVIDUALS.

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AND
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(*From the National Institute for Medical Research.*)

A FEW years ago (1923)[1] we advised the wearing of thin mackintosh or rubber "overalls" for shipwrecked individuals, to keep out wind and water whilst sitting on rafts or in lifeboats, and thus prevent excessive loss of body heat by chilling. As a consequence of our observations special rubber "overalls" have been designed for this purpose, and we have employed the suit termed the "warmalonga"[2] in some further experiments. This suit is complete in one piece, and may be readily slipped on and fixed in position. It is not absolutely water-tight, since it has four openings near the feet and wrists to allow water to escape readily, and thus prevent over-cooling of the feet and arms whilst sitting on a raft or in a lifeboat after immersion in the sea. This suit is probably ideal for a person sitting on a raft or in a lifeboat and exposed to wind and splashings. Our present observations were undertaken to determine whether such a non-water-tight suit possesses any advantage towards preserving body heat over ordinary warm woollen clothing when the subject is wholly immersed in water. Our results indicate that such a non-water-tight rubber suit is not obviously superior to ordinary warm clothing for preservation of body heat when the subject is fully immersed in water.

The Plan of Research.

Our plan of research was as follows. The subject, a diver of experience, sat quietly on a chair for about 20 minutes wearing ordinary clothes or special clothes for the experiment. At the end of 20 minutes his heat loss was estimated, usually over a period of 10 minutes, from the oxygen consumption determined by Douglas and Haldane's technique, as recommended by Cathcart.[3] These results formed the base-line for comparison of the effects of immersion in a bath under different conditions as regards clothing. The temperature of the bath was kept at about 22–23° C. The subject lay as quietly as possible in the bath, any movement being due to shivering and quite involuntary. Two experiments (1 and 2) were carried out in which the subject was naked in the bath. In from five to ten minutes he was shivering so badly that the experiment was terminated. Of course, had he been allowed to move—e.g., make swimming movements—he would not have shivered so soon nor so violently. The shivering caused an average increase in oxygen consumption of over 150 per cent., and was accompanied by heat loss of over 160 per cent. (see table). In the next experiment (3) he wore ordinary clothing whilst lying in the water for ten minutes, and the clothes markedly reduced the heat loss due to cooling by the water. Now the increase in heat loss due to ten minutes immersion was only 57 per cent. instead of over 150 per cent. for a shorter period when naked. In Expt. 4, in addition to ordinary clothing, he wore also the rubber suit whilst in the water. Here, again, the clothes protected to a considerable extent, the increase in heat loss due to the water being only about

[1] Medical Research Council Special Report Series, No. 73, p. 179.
[2] Made by Messrs. Siebe Gorman, Westminster Bridge-road, London.
[3] Jour. Roy. Army Med. Corps, 1918, xxxi., 339.

65 per cent. during ten minutes, as compared with 150 per cent. when naked. It will be noted, however, that the addition of the non-water-tight rubber suit did not prevent loss of body heat any more effectively than did ordinary clothing alone, because the water had entered the rubber suit, through the openings at the feet, and replaced the air inside; this occurred soon after the subject entered the water and was facilitated by an assistant pressing on the suit so that the subject sank in the water in the bath.

Various other arrangements of clothing were tested, including the very thick woollen jerseys, long pants, and stockings as used by divers; sometimes two sets of such garments were worn. In these experiments (5 to 13) the subject lay quietly in the bath for about 20 minutes and could have remained longer. Usually he shivered about four minutes after entering the water, but this shivering lasted only a few minutes and was not violent. The heat loss was estimated during the last eight to ten minutes of immersion—

Expt. No.	Collection of expired air. Time A.M.	Temp. °C.		Pulse.	Respiratory quotient.	O_2 c.cm. per min.	O_2 difference due to bath.		Heat loss.			Remarks *re* clothing, &c.
		Room.	Bath.				C.cm.	Per cent.	Calories per min.	Difference due to bath. Calories per min.	Difference due to bath. Per cent.	
1	11.21 to 11.31	20·0	—	76	0·685	243	—	—	1·14	—	—	Sitting on chair; ordinary light clothing—i.e., woollen undervest and pants, cotton shirt, wool socks, white flannel trousers, and blue serge coat and waistcoat.
	11·45 to 11·52	20·0	23·0	—	0·790	654	+411	+169	3·13	+1·99	+174	Naked in bath for 11 mins.; excessive shivering and discomfort.
2	11.30 to 11.40	18·5	—	74	0·716	306	—	—	1·43	—	—	Sitting on chair; ordinary light clothing as in Expt. 1.
	11.50 to 11.55	18·5	23·0	—	0·895	749	+443	+144	3·68	+2·25	+157	Naked in bath for 8 mins.; excessive shivering and discomfort.
3	11.53 to 12.5	19·0	—	72	0·786	345	—	—	1·65	—	—	Sitting on chair; ordinary light clothing as in Expt. 1.
	12.15 to 12.25	19·0	22·5	87	0·752	547	+202	+58	2·59	+0·94	+57	Lying in bath for 10 mins. in same clothes as above.
4	11.36 to 11.47½	20·5	—	80	0·926	313	—	—	1·55	—	—	Sitting on chair; ordinary light clothing as in Expt. 1, plus rubber suit.
	12.1 to 12.10	20·5	23·0	72	0·835	528	+215	+68	2·56	+1·01	+65	Lying in bath for 10 mins. in same clothes and rubber suit as above.
5	12.10 to 12.20	18·0	—	80	0·763	292	—	—	1·39	—	—	Sitting on chair; ordinary light clothing, plus rubber suit, as in Expt. 4.
	12.32 to 12.42	18·0	22·5	80	0·777	512	+220	+75	2·44	+1·05	+75	Lying in bath for 20 mins. in same clothes and rubber suit as above; temp. inside rubber suit 24–25°C. Shivering after 4 mins., but stopped in another 4 mins.
6	11.50 to 12.0	18·0	—	84	0·800	307	—	—	1·47	—	—	Sitting on chair; same clothes, &c., as in Expt. 5.
	12.10 to 12.19	18·0	22·0	93	0·868	655	+348	+113	3·20	+1·73	+117	Lying in bath for 18 mins. in same clothes as above; shivering after 3½ mins.
7	12.18 to 12.28	21·0	—	72	0·700	275	—	—	1·28	—	—	Sitting on chair; same clothes as in Expt. 1, except no coat; wearing also diver's woollen jersey and pants.
	12.38 to 12.46	21·0	22·5	84	0·843	564	+289	+105	2·74	+1·46	+114	Lying in bath for 15 mins. in same clothing as above; shivered after 4 mins.; shivering gradually lessened.
8	12.13 to 12.23	19·5	—	77	0·700	301	—	—	1·41	—	—	Sitting on chair; same clothes as in Expt. 7, plus rubber suit.
	12.35 to 12.45	19·5	22·5	72	0·766	382	+81	+27	1·82	+0·41	+29	Lying in bath for 20 mins. in same clothing, &c., as above; shivered at about eighth min., but stopped in a few minutes.
9	11.43 to 11.53	20·5	—	77	0·700	310	—	—	1·45	—	—	Sitting on chair; 2 diver's jerseys, 2 diver's pants, and pair thick woollen stockings.
	12.4 to 12.14	20·5	22·5	75	0·837	450	+140	+45	2·18	+0·73	+50	Lying in bath for 20 mins. in same clothing as above; shivered in 4 mins., but stopped in another 3 mins.
10	11.47 to 11.57	18·5	—	84	0·744	306	—	—	1·45	—	—	Sitting on chair; same clothes as in Expt. 9, plus rubber suit.
	12.9 to 12.19	18·5	22·5	79	0·768	484	+178	+58	2·30	+0·85	+58	Lying in bath for 20 mins. in same clothing, &c., as above; very slight shivering.
11	11.49 to 11.59	18·0	—	78	0·766	294	—	—	1·40	—	—	Sitting on chair; diver's jersey, diver's pants, and pair thick woollen stockings, plus rubber suit.
	12.14 to 12.24	18·0	22·5	78	0·824	499	+205	+69	2·41	+1·01	+72	Lying in bath for 20 mins. in same clothing, &c., as above; water at 43° C. poured into suit previously.
12	11.36 to 11.46	19·5	—	77	0·738	304	—	—	1·44	—	—	Sitting on chair; same clothes as in Expt. 11.
	12.1 to 12.11	19·5	22·5	83	0·764	543	+239	+78	2·58	+1·14	+79	Lying in bath for 20 mins. in same clothing as above; shivered after 5 mins., but only for a few minutes.
13	11.48 to 11.58	18·5	—	84	0·746	295	—	—	1·40	—	—	Sitting on chair; same clothes as in Expt. 11.
	11.59 to 12.9	18·5	22·5	75	0·801	484	+189	+64	2·32	0·92	+66	Lying in bath for 20 mins. in same clothing as above; shivered after 4 mins., but shivering lasted only 3 mins.

that is, from about the tenth to twentieth minute. The thick woollen diver's clothing was a good protective against chilling, particularly when worn double, as in Expt. 9; here, after 20 minutes immersion, the heat loss was increased only by about 50 per cent. In Expt. 10, when the non-water-tight rubber suit was used in addition, the heat loss was increased by about the same amount—namely, 58 per cent. In Expt. 8 the rubber suit seemed to reduce the heat loss markedly when compared with Expt. 7, probably because, for some unknown reason, the clothes remained drier in Expt. 8 and contained more air than usual. Whatever the explanation, this apparently protective effect of the rubber suit could not be confirmed by other experiments, the main conclusion being that when fully immersed in water, a subject is nearly as well protected against cold by ordinary woollen garments as he is when wearing in addition a non-water-tight rubber suit as the outer garment. In Expt. 11 hot water at 43° C. was poured into the rubber suit, but this preliminary warming had no material effect on the subsequent cooling by the bath.

Conclusion.

Of course, the ideal for a person immersed in cold water would be warm clothing, together with a water-tight suit which would keep out the water entirely. Our experiments prove, however, that for at least 20 minutes ordinary thick warm clothing affords quite a good protection from chilling, even if the subject does not increase his heat production greatly by movement. This is of importance in connexion with diving at shallow depths for short periods and using the self-contained diver's apparatus, in which the diver carries his own oxygen in a cylinder on his back. Once, however, a person is sitting on a raft or in a lifeboat, exposed to a chilling wind and splashings of water, then the non-water-tight rubber suit would afford very much greater protection from chilling than would ordinary clothing; of course, any ordinary mackintosh material or garment equally impermeable to wind and splashings would be equally effective as the rubber "overalls."

REGISTRATION OF OPTICAL PRACTITIONERS.

REPORT OF THE DEPARTMENTAL COMMITTEE.

THE Committee appointed in March of last year by the Minister of Health and the Secretary of State for Scotland to consider the Optical Practitioners (Registration) Bill and to make recommendations has brought in a report, which may be obtained from H.M. Stationery Office (Cmd. 2999) for 6*d*.

The membership of the Committee consisted of Mr. F. B. Merriman, K.C., M.P. (Chairman), Mr. O. Aves, Mr. W. B. Barker, Dr. H. B. Brackenbury, Mr. L. G. Brock, Mr. E. Treacher Collins, F.R.C.S., Mrs. W. L. Courtney, Lord Cozens-Hardy, Mr. R. J. Davies, M.P., Mr. H. L. F. Fraser, LL.B., Dr. C. O. Hawthorne, Mr. G. E. Houghton, Sir Henry Keith, with Mr. J. S. Henderson (Ministry of Health) as secretary.

The proceedings were held in private, no reports being issued to the press. Oral evidence was taken at 10 of the 14 meetings of the Committee from bodies and persons as follows: Joint Council of Qualified Opticians, Institute of Ophthalmic Opticians, British Optical Association, Association of Dispensing Opticians, National Association of Opticians, the Worshipful Company of Spectacle Makers, Institute of Chemist Opticians, the Association of the College of Optics, Northampton Polytechnic Institute, the General Medical Council, the British Medical Association, Council of British Ophthalmologists, the Medical Practitioners' Union, Ophthalmic Benefit Committee, National Conference of Industrial Assurance Approved Societies, National Conference of Friendly Societies, and the Parliamentary Committee of the Coöperative Congress. Among the memoranda submitted was one from the Ministry of Health regarding optical laws in other parts of the British Empire and in the United States of America.

Previous Inquiries.

It is recalled in the report that although a "Sight Testing Opticians Bill" was introduced in the House of Lords in 1906, and Acts were passed in the following years for the purpose of regulating the practice of sight-testing in Canada, Australia, and the United States of America, the demand for State registration of opticians does not appear to have been pressed strongly in this country until after the war. In recent years the question has become one of increasing controversy and was examined by the Departmental Committee on the Causes and Prevention of Blindness, which reported in 1922 to the effect—

that it would be undesirable and a positive danger to the public for Parliament to pass any measure which might convey the idea that an optician, who is a person qualified to provide glasses prescribed by medical men, is further himself competent to examine the eyes of patients and to *prescribe* glasses for the correction of errors of refraction.

This committee considered that if a register were established it would probably be difficult to prevent unscrupulous persons who might succeed in obtaining admission to it from posing and advertising themselves as experts competent to treat diseases of the eye, and the danger to the public would be increased as they would regard the register as an official guarantee that those whose names were included in it were competent not only to provide but to prescribe glasses, and generally to deal with defects of vision from whatever cause arising.

The Royal Commission on National Health Insurance had the question of the State registration of opticians before them in connexion with their examination of the problems arising out of the provision of ophthalmic benefit which is an additional benefit that may be adopted by approved societies. Without expressing any opinion on the subject, the Commission called attention in their report (1926) to the fact that an ophthalmic service was only part of a general service of specialists and consultants and to the difficulties which were encountered when the State found it necessary to limit the practice of dentistry and midwifery to those possessing the requisite professional qualifications, and said that it was a matter for consideration whether similar problems were not being engendered in the case of the opticians. They pointed out that the difficulties became greater as the volume of unqualified practice increased, and suggested that if it became necessary to regulate the practice of opticians much was to be gained by taking the necessary step while the problem was still manageable.

Arrangements for Ophthalmic Benefit.

It is, states the report, within the discretion of an approved society to decide whether a member, who has been recommended for ophthalmic benefit by his insurance doctor, should be sent for examination to an oculist—i.e., a qualified medical practitioner who has made a special study of the treatment of the eye, or to an optician. If it is decided that the member should be examined by an oculist, the society would normally send him to one of the doctors on a list prepared by the British Medical Association with the approval of the Minister of Health and the Scottish Board of Health. That list contains the names of about 800 oculists practising at some 1000 addresses throughout Great Britain, who are willing to make examinations for approved societies at the special fee of £1 1*s*. It has been reported to the Committee, however, that in the case of one group of approved societies, representing a total of about 6,000,000 insured persons, only a very small percentage of their members recommended for ophthalmic benefit are sent either in the first place or after examination by opticians to oculists, and that this group is satisfied with the services rendered by the selected opticians. These societies make it a condition of grant that their members should go to an optician on the register

prepared by the Joint Council of Qualified Opticians, the fee for examination being 5*s*. The Committee was told also that while some other societies require or recommend their members to go to opticians on the Joint Council register, certain other societies make arrangements for the examination of their members by opticians. In 1924 the sum of about £30,000 was spent in England on ophthalmic benefit, and in 1926 the Joint Council of Qualified Opticians received, for distribution amongst opticians on their register, a total sum of £82,257 out of the funds available for ophthalmic benefit, while during the first part of the year 1927 the corresponding payments to these opticians have been at the annual rate of about £178,000.

Registration in Other Countries.

Provision is made by law for the registration of opticians in eight of the provinces of Canada, in three of the States of Australia, in Jamaica, and in the great majority of the United States of America. The practice of sight-testing is restricted to medical practitioners and to persons whose names appear on the official register, and in addition, in some States, the mere selling of spectacles by unregistered persons is also prohibited. Further, in most cases one of the objects of legislation has been to prohibit the selling of spectacles by itinerant vendors. Generally speaking, opticians in these countries are restricted in their practice to the measurement of errors of refraction, and are prohibited from using drugs or from attempting the treatment of any disease of the eye. This legislation has been effective in putting down the unregulated sale of spectacles, and has had the effect of raising the standard of qualification of opticians.

The Present Bill.

The Bill, of which the main provisions were set out in THE LANCET of March 12th, 1927 (p. 570), is not prohibitive in the sense that it would exclude unregistered opticians from continuing to practise, as is the case in most of the other countries to which our attention has been called. It proposes to leave to a board the duty of deciding the qualifications which would entitle an optician to be placed on the register, and, theoretically at least, it would be possible for a great number of existing opticians to be refused admission to any register which might be set up under the Bill. The Bill has been promoted by the Joint Council of Qualified Opticians, which is an association with limited liability registered under the Companies Acts, and governed by a small committee, the members of which are partly appointed by two other associations and partly elected by the opticians whose names appear on the register of the Council. Before an optician can be accepted for inclusion in the register, he must have obtained the diploma either of the Spectacle Makers Company or of the British Optical Association.

CONCLUSIONS OF THE MAJORITY REPORT.

The conclusions reached by ten members of the Committee, including the chairman and the three medical members, are thus summarised. We have seen, they say, that the functions of even the best qualified opticians should be restricted to the use of mechanical means for the correction of errors of vision, and that in the best interests of the patient the responsibility for any examination of the eyes should be upon an oculist, who, in addition to having access to all the resources of the skilled optician, can bring to bear the whole of his medical experience either in deciding that it is possible to determine the absence of disease or, on the other hand, to recognise and to treat any diseased condition that may be present. Opticians cannot, therefore, provide more than at best a partial service, but in view of the fact that large sections of the community in present circumstances do not avail themselves of the services of oculists and of the fact that the public are not in a position to recognise which are the most competent opticians, there is a prima facie case for setting up a State register in order to produce some sort of order out of the present chaos.

As, however, a considerable proportion of cases of defective vision are not cases of mere refractive error but require treatment other than, or in addition to, the provision of spectacles, it follows that the very prescription of spectacles involves an implied decision that no other treatment is required; and we think that this consideration must necessarily govern the standard to be set for admission to any register. After a careful review of the facts regarding the training of opticians as a whole, we have been forced to the conclusion that it would not be in the public interest to set up a prohibitive register which would involve the admission of practically all opticians who were able to show that they have been conducting bona fide businesses. At the same time the setting up of a non-prohibitive register would be useless if not dangerous unless it were made a condition of entry that every candidate should prove to the satisfaction of the Board his ability to exclude the possibility of the existence of disease before prescribing spectacles. We are not satisfied that even those opticians who are most highly qualified in all other respects are sufficiently trained in this respect. Further, the setting up of a register of sight-testing opticians would necessitate the separate registration of opticians who undertake dispensing only.

We find that it would be necessary not only to impose restrictions on registered opticians in the way of treatment, of advertising, and of using confusing or misleading titles, but that it is imperative that they should be prohibited from using drugs. Such a restriction would in effect severely limit the classes of patients whom the opticians would be capable of treating.

State Register Not in Itself Desirable.

In view of all this, we are convinced that the setting up of a State register of sight-testing opticians is not in itself a desirable policy. There remains, however, the question whether it is nevertheless necessary, having regard to existing circumstances, to adopt this expedient in the public interest. In our opinion the answer to this question depends on how far the medical profession is likely to be able to make the services of oculists available for persons in those sections of the community for whom at present they are, for economic reasons, not available.

Prospect of the Extension of the Services of Oculists.

Whether it is as the result of the establishment by approved societies of ophthalmic benefit, or of the question of registration becoming acute, or of the increasing competition of better trained opticians, or merely of the greater public recognition of the importance of defects of vision, we are satisfied that there exists a movement on the part of the medical profession to provide treatment by oculists on terms which will make that treatment much more readily accessible to the public. We are assured, for example, that so far as insured persons are concerned, negotiations are at present being conducted by the British Medical Association with a view to the establishment in all the more populous districts of clinics or other schemes by which the services of oculists would be made available at fees within the reach of approved societies, having regard to the limited funds available for ophthalmic benefit.

Number of Oculists Available.

Moreover, we are satisfied that in recent years an increasing number of medical men, and particularly the younger men, have been making a special study of ophthalmology; also, that there is good reason to believe that a supply of oculists, sufficiently well distributed to meet reasonable demands, will be forthcoming. The setting up of a State register of opticians would not encourage and might indeed retard these movements. We feel that it would be a retrograde step on the part of the State to do anything to discourage the provision of the best

form of treatment for the greatest possible number of patients.

Future of Opticians.

It has been claimed, probably with truth, that the setting up of a State register would incite those responsible for the training of opticians to raise the standard of qualifications, but we see no reason why the improvement in methods of training which has been made in the last 10 or 15 years should not be maintained, though no register is set up. Whether the register is set up or not we feel sure that numbers of the population will resort to opticians in the future, as they have done in the past, and we think that the natural competition which will be engendered by the movement on the part of the medical profession to which we have referred will have the effect of raising the standard in both classes of practice. Further, in view of the large numbers of opticians who are undoubtedly capable refractionists, we consider it would be beneficial in the public interest if use could be made of their services in that capacity in collaboration with and under the control of oculists.

While we have been forced to conclude that it is not in the public interest that a State register of opticians should be set up, we desire to emphasise that one of the principal reasons on which we base this opinion is our view that it is possible and probable that the medical profession will be able to provide insured persons entitled to ophthalmic benefit with the services of oculists at an early date, and at fees within the limit of the funds from time to time available to approved societies for this purpose. We hope, also, that such a service will be extended to the non-insured population. If, however, for any reason, these hopes are not fulfilled within a reasonable time we do not wish our report to preclude the possibility of a reconsideration of the question in the light of the circumstances then existing.

MINORITY REPORTS.

Of the two minority reports the former is signed by three members, Messrs. Aves, Barker, and Houghton, who conclude that the case for the regulation of the practice of optometry by means of a State register is well supported, and that the Committee incurs a serious responsibility in making an indeterminate report. If this issue is shelved at this juncture through reluctance to tackle the problem they foresee as a consequence—

(*a*) the creation of further vested interests which will complicate the problem on the inevitable reopening of the question;

(*b*) the creation of an unfair prejudice against the case of the qualified opticians whose past voluntary efforts have earned the praise of the whole Committee that has heard the evidence; and above all

(*c*) an encouragement to the pretensions of incompetent persons whose activities constitute the most serious and obvious danger to the public.

In the second minority report Mr. Davies records his opinion that optical practitioners should be registered on the general lines of the provisions of the Bill with the following reservations:—

(*a*) As a great deal of the work of optical practitioners is now performed in connexion with the supply of appliances to members of approved societies, there ought to be at least two representatives on the Registration Board representing what may be termed the consumers, to safeguard the interests of insured persons against any tendency to excessive charges by optical practitioners.

(*b*) The entry of young persons into the profession should not be confined in all cases to those who have passed the matriculation certificate, so that suitable young aspirants whose means have precluded a matriculation standard of education should be enabled (with maintenance allowances) to train and qualify for the profession.

The register on its first compilation should, he thinks, include, in addition to those of undoubted qualification and training, a limited number of those with a wide experience of sight-testing and the sale of appliances, but who are now without other qualifications. There should, however, be a time limit (say, as from Jan. 1st, 1930) to the operation of this principle.

CANCER OF THE UTERUS.

THE REDUCTION OF MORTALITY.

THE Ministry of Health to-day issues the sixth[1] of a series of memoranda compiled by the Departmental Committee on Cancer. These memoranda are based on a statistical analysis of the records of all the series of patients affected at such sites which have been published in the medical journals of the world, supplemented, when practicable, by an examination of the records of representative hospitals at home. Such analysis shows the effect of current methods of treatment and affords a standard of comparison for the future. The report is an instructive statement of our present knowledge and its implications, as will be seen from what follows.

ABSTRACT OF THE REPORT.

Cancer of the uterus accounts for between one-fifth and one-sixth of the total mortality from cancer among women. It may occur at any period of adult life, and does so with steadily increasing frequency until at least the age of 60 to 65, after which a small decrease is recorded. Among single women the recorded increase continues to higher ages still. There is therefore no special tendency for the disease to occur about the period of the menopause. Cancer of the cervix is perhaps ten times as common as cancer of the body of the uterus. It is more serious and affects on the average younger women, and the following statements should be regarded as applying to it.

The commonest *symptoms* are hæmorrhage, discharge, and pain. Hæmorrhage occurs in nearly 70 per cent. of cases—especially irregular hæmorrhage, though increasing excessive loss at the monthly periods may also be a manifestation. Irregular periodicity is not uncommon arising out of the menopause alone. The important point to bear in mind therefore is that irregular bleeding in a woman of any age should necessitate immediate and thorough investigation of its cause. The next commonest symptom (in about 20 per cent. of cases) is an abnormal discharge; less common still, at all events in the early and curable stages, is pain (in about 8 per cent. of cases). In the absence of treatment the disease runs its course, from the onset of symptoms to death in a period which, on the average, does not extend to two years, and may be put at one year and nine months. This period, known as the "natural duration," is considerably shorter than that for cancer of the breast.

Antecedent Conditions.—In many instances the disease supervenes upon a chronic inflammatory condition which is often the result of an injury arising from childbirth, and may or may not be associated with a microbic infection. This sequence of events is no more common among women who have borne many children than it is among those who have borne few. It appears, therefore, that it is not a question of the number of labours but rather the fact of a labour having taken place at all that is of importance in causation. A proportion of cases, however, occurs among infertile married and among single women, while a few cases have been recorded in virgins.

Diagnosis.—Once suspicion has been aroused by one or more of the three main symptoms an immediate local examination is essential. In no other way can the point be settled and a sure diagnosis, whether negative or positive, be arrived at. Women having such symptoms should allow no consideration to interfere with their determination to undergo any examination necessary for reaching a definite diagnosis.

Treatment.

Until recent years treatment consisted of operation for those patients seen at a sufficiently early stage,

[1] Cancer—VI. Circular 826. Ministry of Health, 1928. H.M. Stationery Office. 1*d*.

and palliative methods for the remainder. Nowadays the position is changing owing to the gradual advances in treatment by radiology. In some foreign hospital centres this method of treatment has already replaced operative methods entirely; in other centres and countries operative methods are employed for the earlier cases, and radiological ones for those deemed imoperable or unlikely to survive operation for a prolonged period.

Operation.—In judging the effect of operative treatment three main factors require consideration—operability, operative mortality, and survival-rate. (1) Operability varies to some extent with the skill and judgment of the surgeon, but on the average less than half the women applying for treatment are in a condition at which operation can reasonably be undertaken. (2) Operative mortality cannot be considered alone, but only in conjunction with operability. Bearing in mind the varying factors it may be said that on the average the operative mortality is in the region of 10 to 20 per cent. Although of recent years mortality after operation has declined, especially in the hands of experienced surgeons, it still remains an important factor in advanced cases. (3) If recurrence of the local disease takes place after operation, it does so in at least 90 per cent. of cases within five years of the operation. This generalisation is sufficiently true to render survival to a period of five years a reliable criterion of the results of operation. The proportion of patients surviving for five years after the modern operation may be put, on the average, at 40 per cent., though the ratio naturally varies with the skill of the surgeon and the stage of the disease at operation. The results in early cases are roughly twice as favourable as those obtained in patients on the borderline of inoperability.

Radiation.—Treatment mortality is almost negligible with modern radiological methods, a point of distinct importance in a comparison with operative treatment. In weighing results two classes of patient must be considered, the operable and inoperable, since both are susceptible of treatment by radiation. As the method is modern and incompletely developed, making use of agents whose action is not yet well understood, it was applied in the first instance to patients beyond the reach of surgical operation. The period during which observation of cases has been possible is short, some 12 to 14 years, though long enough to indicate that in about 10 or 12 per cent. of these so-called inoperable cases survival to a period of five years can be secured. Some radiologists have extended their treatment to patients in the operable class with the result of obtaining a survival-rate to five years approximately the same as that secured by operation—viz., 40 per cent. These results are secured at the cost of practically no immediate danger to life and without some of the other disadvantages attendant upon surgical operation; moreover, in those instances where eradication of the disease is not secured a considerable degree of palliative action is possible.

A summary account such as the above may, however, convey a misleading impression, since in England the methods have not been extensively used and the published results are very few. The material and apparatus necessary for the treatment are costly, the action of the agents is very incompletely understood, and the number of centres equipped with the necessary material, apparatus, trained staff, and beds is so far small. Pending further developments, therefore, in this and possibly other methods of treatment, chief reliance must be placed on operative surgery.

Conclusions.

A steady improvement in the treatment of local lesions incidental to childbirth may reduce the *incidence* of cancer of the cervix and so accelerate the present downward trend of mortality at this site. Since the interval between the initial lesion and the onset of cancer may be 10, 20, or even 30 years, and since, probably, a small proportion only of women with such lesions eventually develop cancer, the evidence of such preventive treatment will be delayed and gradual in its appearance.

From the point of view of the surgeon or radiologist improvements in treatment depend upon future advances in medical knowledge. From the patient's point of view immediate improvement is possible through a larger proportion of patients presenting themselves for treatment in the early stages of the disease. In spite of the advanced stage of the disease at which women now present themselves, as shown by the low proportion found suitable for operation, as many as 40 per cent. of those undergoing operation survive for five years—and recurrence after five years' freedom is a comparatively rare event. The future holds out promise of an equally effective and, it is permissible to hope, an even more effective treatment by radiology without some of the dangers and inconveniences attendant upon operation.

As has been said, the average interval between the onset of symptoms and death in untreated patients is less than two years. On the average, some six months is allowed to elapse between the patient's noticing symptoms and applying for treatment at hospital, and it is clear that one great cause of the comparatively small proportion of cures is delay in seeking treatment. When it is also realised that by no means all the sufferers apply for treatment, and that among those who do the results are twice as good in early cases as in late ones, some idea is reached of the number of lives that could be saved if *all* sufferers underwent treatment at an early stage. Women should be helped to realise that *irregular* bleeding from the womb imperatively demands immediate and thorough investigation. The mere possession of this knowledge, however, may not be sufficient, since for various reasons, such as difficulty of access to hospital, interference with domestic duties by delay at hospital, unwillingness to submit to operation, a natural human tendency to procrastination, &c., women may fail to act upon the knowledge. Educational measures may be confidently anticipated to be of value, whilst investigation of the causes of delay in obtaining early treatment and their remedy or removal whenever possible should also be helpful. One of the ways by which some causes for delay may be counteracted is now undergoing trial by certain local authorities—namely, the establishment of a special centre or "clinic" for diagnosis and advice. In this, and doubtless in other ways, means may be found for inducing a larger proportion of patients to undergo treatment at a stage where the prospect is hopeful. The means for effective treatment exist; the problem is that of bringing the patients within their sphere.

VIENNA.

(FROM OUR OWN CORRESPONDENT.)

Tuberculosis among School-children.

THE School Board of Vienna, in coöperation with the Municipal Board of Health, some time ago started regular medical examination of all children attending public or private schools. Each of the school doctors has to examine about 2000 children several times annually. Within the last two years special attention has been paid to the incidence of tuberculosis, and besides a clinical examination, tests have been made by rubbing a small quantity of "dermotubin" into the skin of the forearm or the breast. In the school year 1925–26, 33·7 per cent. of the boys and 34·5 per cent. of the girls gave a positive reaction, whilst in 1926–27 the figures were only 30 per cent. for the boys and 31 per cent. for the girls. In cases reacting severely or showing progressive symptoms, the members of the family were asked to come up for examination at one of the tuberculosis stations in Vienna. Nearly 80 per cent. responded, and it was thus possible to ascertain the state of their health. Thirty-two per cent. appeared to be healthy—i.e., non-tuberculous—while 68 per cent. were more or

less tuberculous or showed signs of previous lesions. Only 17 per cent. had manifest lesions. It is interesting to note that whilst among the children the incidence was a little greater among females, among adults the male was more often affected (54 per cent.). Of the school-children who were tuberculous, 75 per cent. showed symptoms from the respiratory tract alone, 3 per cent. were affected in other organs as well, and 4·2 had non-respiratory lesions only. The remaining cases could not be definitely classified without a further examination, which was beyond the scope of the school doctor.

Foreign Students.

The medical faculty of Vienna has decided to stop admitting foreign students, other than qualified doctors, to the institute of anatomy and to the dissecting theatres until all Austrian students have been accommodated. This measure has been adopted because of the permanent scarcity of bodies for the dissecting rooms. At present there are only 27 bodies available and not more than 50 others are likely to accumulate during the winter term. Over 600 students are engaged in dissecting, and some 25 bodies are also required for examination purposes. There is, therefore, a real danger that many students may be prevented from completing their studies owing to the impossibility of finishing their course in anatomy. As more than 40 per cent. of the medical students in Vienna are foreigners, mostly from the south-east of Europe and the Balkan States, the Austrians resent their presence. This term all the Austrian applicants had to secure their places a fortnight before the ordinary matriculation took place, and in consequence, a large number of Hungarian, Bulgarian, and Rumanian students have left the university and have gone to Italy, France, and Switzerland, where there are no restrictions of this kind. Several classes of the population deplore the loss of some hundreds of students, and in medical circles, too, the decision of the Senate is criticised. The restrictions are only intended for students and not for doctors, and the usual post-graduate work for foreigners in hospitals and other institutions is not affected.

Surgery of the Brain.

In the course of a recent lecture at Vienna University Prof. Anton v. Eiselsberg said that in cases of head injury active measures should be taken in the presence of any progressive condition such as hæmorrhage from the meningeal artery. Otherwise, a conservative policy might be adopted. Where the brain was injured, he said, the patient usually died unless operation was undertaken. During the war Bárány had operated at once on all tangential injuries of the skull, closing the wound immediately, and this plan had given satisfactory results in hospital. All open injuries of the skull needed active treatment and should therefore be dealt with in hospital as abscess of the brain might follow even a slight wound. Conservative, expectant treatment was useful in injuries of the base and in concussion of the brain. Fracture of the base did not necessarily mean an unfavourable prognosis, and the results were bad only when there was infection from the middle ear or the frontal sinus. Operation would be needed if the intracranial pressure increased. Gunshot wounds of the skull, continued Prof. Eiselsberg, might be either tangential, perforating, or intracranial. In the first group all the injured parts—brain, dura, &c.—should be removed so as to prevent bacteria from finding cover. In perforating wounds, as in gunshot wound of the thorax, the openings at the entrance and exit should be cleared of all useless material; the intermediate tissues could not be disinfected. With intracranial wounds the patient was in constant danger. If possible, bullets lying superficially should be removed, but deep-lying bullets were for the most part best left alone as operation was often very dangerous—even more dangerous than the presence of the bullet. In cases of cerebral abscess, Prof. Eiselsberg said, it was difficult to know when to operate. If no pyogenic membrane had formed, inflammation would continue in spite of the abscess being opened. The surgeon should always try to open and drain the abscess at its deepest point, and the posture of the patient should be adjusted accordingly. If too long a time elapsed before operation the patient might succumb to a pyencephalus. (Ten patients out of 18 operated on for cerebral abscess at his clinic had died from this cause.) The condition called pseudo-abscess, of which he had seen five cases, must also be taken into consideration; in these cases the typical symptoms of an abscess developed after injury, but operation revealed a cyst with clear contents.

BERLIN.

(FROM OUR OWN CORRESPONDENT.)

Murder by Lead Poisoning.

A REMARKABLE trial took place lately in Landberg, a town in Brandenburg. The case was as follows. A man, after having drunk a glass of beer at home, was taken ill with severe colic. As the symptoms recurred repeatedly a doctor was consulted, who found the patient with a livid complexion and suffering from spasmodic contraction of the intestine, severe constipation which could in no way be overcome, and with retention of urine. His condition grew worse, and he died about a month after the doctor's first visit. Owing to the obscurity of the case it was suggested that a post-mortem examination should be performed, but the wife of the deceased objected, saying that she had promised her husband that she would not allow it. Some time later, however, it was rumoured that the man had not died a natural death and accordingly the corpse was exhumed by judicial order, and an official post-mortem examination was made by the law-court medical officers. The result was very striking. The stomach and the intestines were shown to form a dark mass containing sulphide of lead, which was detected in nearly every organ of the body, the total quantity being 19 g. At the trial the wife finally admitted that she had given her husband a powder which her lover had procured for her. He had designed the powder as a sedative compound, but it obviously contained white lead. Both the wife and her lover were sentenced to death.

Medical Staff on Liners.

Formerly medical officers on liners were usually appointed for a single journey only, the appointment being renewed if both parties agreed. The Hamburg-Amerika Line, the big German shipping company, has now made other arrangements, appointing a staff of permanent medical officers. Medical practice on board ship, they point out, requires special knowledge which cannot be gained by the medical man who only makes one or two journeys with the object of seeing foreign countries or enjoying the life on board. The new permanent medical officers will receive a salary sufficient to enable them to give up private practice, and they will be given regular holidays. The company, moreover, has decided to pay the expenses of post-graduate study for their doctors which will enable them to keep abreast with modern progress. The pharmacies and the hospitals on board ship have also been enlarged and fitted with modern appliances. This information will be of interest to readers of THE LANCET in connexion with the article published on Oct. 29th, 1927, dealing with the medical service of the British mercantile marine.

Aeroplanotherapy.

Dr. Kettner, of Charlottenburg, reports that one of his patients, the owner of an aeroplane, asked him whether he agreed to his daughters aged 9 and 11 being taken a short trip in his aeroplane, in spite of the fact that they were suffering from whooping-cough. He gave his consent, and the result was that after the first journey the coughing fits became less frequent and

considerably less severe. Dr. Kettner thereupon advised the father to repeat the trip, and within a short time the illness was cured. The children remained in the air for about an hour each time and the aeroplane rose to an altitude of 3000 metres. A third child, being only one year old, was not taken with the others, and his illness took the usual course. Dr. Kettner proposes that the large aeroplane works should place aeroplanes at the disposal of the health authorities for experiments on a larger scale. Change of climate is known to be the best remedy against whooping-cough; it may sometimes be much cheaper for patients to travel in an aeroplane than for them to spend weeks in the mountains or at the seaside.

The Action of Hormones.

The German Pharmacological Society lately held its annual meeting at Würzburg. The first subject to be discussed was the physiological action of insulin. Dr. Kessel said that the glycogenic action of the liver is hindered by insulin and the power of the erythrocytes to absorb sugar is increased. Guanidine also produces a decrease of sugar in the blood, but only in a lethal dose. In synthalin, he said, the lethal and the curative doses are not widely separated. Dr. Beylonia (Utrecht) spoke of the action of the hypophysis, of which he considers there are five different parts with different actions. Some of these act on the uterus, some on the bronchial muscles, and some on the breast. Prof. Ernst Laqueur (Amsterdam) spoke on female sexual hormones, of which he had produced an extract acting on sexual desire and on the growth and the secretion of the mammary gland. Prof. Ludwig Fraenkel (Breslau) said that the compound acted successfully in about 30 per cent. of the cases in which there had been trouble caused by weakness in the function of the ovaries, menstruation being again restored. The hormone may be extracted from the urine of women in the last months of pregnancy.

A New Institute at Heidelberg.

An institute for research in internal medicine is to be established in Heidelberg. It will be connected with the existing institute for cancer research, founded by the late Prof. Czerny, and with the institute for the study of albuminous substances, of which the late Prof. Kossel was the head. The new building, for which a committee of medical experts and distinguished men of other professions will be responsible, will include departments for pathology, medical chemistry and physics, and psychology. The city of Heidelberg has presented the committee with a building site, and the German Treasury will contribute to the expenses.

Election to the Medical Chamber.

This year proportional representation, which is employed for political elections throughout Germany, was for the first time used in electing members of the medical chambers which are the official representative bodies in every province, and have disciplinary powers as well as the right to tax members of the profession. Formerly there used to be practically no contests during the elections in Berlin and in the provinces, since large medical unions gave their consent to a list of representatives, an absolute majority being in this way assured. Under the new system in Berlin this year there were very heated contests resembling in many ways political elections. As many as eight lists of candidates were presented to the voters; of these the only ones of interest, apart from the list of the combined medical societies, were those of the Socialist medical men, of the assistants, and of the club medical officers, who are against the system by which patients have free choice of doctor. At least 75 per cent. of the profession took part at the elections, with the result that members on the list of the combined medical societies, who alone had held all the seats in the former chamber, gained only 52 out of a total of 106. The discussions in the chamber are therefore likely to become more animated.

Sick Club v. *Medical Profession.*

The sick club of the Krupp's works at Essen has instituted a dispensary for its members and tried to appoint medical men who alone will have the right of attending to members. As a large part of the population of Essen is employed at Krupp's works, if this came into effect local medical men would be deprived of a serious part of their income. The local branch of the Hartmann-Bund therefore has prohibited its members from accepting appointments at the dispensary, which has thus had to be closed down. The members of the club in consequence have had the greatest difficulty in obtaining medical attendance other than at their own expense, and the club has brought an action for damages against the Hartmann-Bund. This has been dismissed by the court which stated that the action of the Hartmann-Bund was undertaken to protect the local medical profession. The work of the club would not, as the plaintiffs had alleged, be rendered impossible as a result of the boycott ordered by the medical profession, provided that the medical men were not excluded from working at the dispensary.

UNITED STATES OF AMERICA.

(FROM AN OCCASIONAL CORRESPONDENT.)

The Position of Midwives.

THE present position of midwives in the United States is shown as a result of an inquiry made throughout the country by the Medical Society of Virginia. Out of 96 questionaires sent to State medical societies and health officers 59 replies were received. Only four States, all in the south, reported that the number of physicians was insufficient to attend all cases of labour. Four other States qualified an affirmative answer by adding "if properly distributed." Massachusetts, Vermont, New Hampshire, Michigan, Iowa, Oklahoma, Nevada, and Kansas stated that 95 to 100 per cent. of the indigent or poorer cases were attended by physicians. Delaware, North Dakota, and Colorado estimated 80 to 90 per cent., while all the rest gave figures lower than 50 per cent. As regards the medical sentiment towards midwives 16 States do not want them, 14 do "when they are necessary." Two States want midwives for coloured cases only, two States are indifferent, and two States so hostile they will not recognise them at all.

In New York State, according to *Health News*, the official organ of the Department of Health, regulation of the practice of midwifery is resulting in the gradual disappearance of midwives. When the licensing of midwives was first required in 1914 a survey showed more than 1000 women practising in the State (New York City and Rochester excluded). Some of these had had four years of training in European schools, others had some training, while still others were dirty in their methods, ignorant, and absolutely untrained. All were more or less careless in reporting births. The most disreputable lost their licences forthwith. Since 1914 a total of 773 women have been licensed, but as there is a constant loss of midwives from practice, as is the case in every country, there will be only about 300 licences issued in 1928. Only 11 first licences were issued in 1927. The number of births reported by midwives seems to be decreasing even more rapidly than the number of midwives in practice. In 1916 it was estimated that midwives were reporting 16 per cent. of the births; ten years later only 6 per cent. were reported by midwives.

While this tendency seems to be fairly prevalent throughout the country, leading obstetricians are asking whether it is certain that the American system of giving preference to physicians and hospital care of maternity is really better than the European system, which allows midwives to practise in normal cases. The statistics of maternal morbidity and mortality, even when allowance is made for possible deviation in standards of notification, do not give much comfort to

the United States. Moreover, Dr. Josephine Baker has recently produced comparative statistics from the States themselves which are all in the favour of the midwife, imperfectly trained and supervised as she so often is. This is plainly shown in the following tables derived from Dr. Baker's statistics :—

TABLE I.—*States in which Midwives are Working.*

	Per cent. births reported by midwives.	Maternal mortality.
Minnesota	9·4	5·3
Kentucky	17·7	6·0
Maryland	18·1	5·8
New Jersey	21·7	6·4

TABLE II.—*States in which Midwives are not Working.*

	Per cent. births cared for by physicians.	Maternal mortality.
New Hampshire	100·0	7·1
Vermont	100·0	6·8
Oregon	100·0	7·2
Wyoming	99·2	9·0

The corresponding rate for the birth registration area is 6·4. It is to be observed that the States in Table II. are all sparsely populated. On the other hand, the coloured population of Kentucky and Maryland would stack the cards against the midwives. One argument used by public health officials against the employment of midwives has been that the ideal is to care for all cases of labour in hospitals. Whether or not this ideal is practicable is one question; another is as to whether it is desirable. The increasing number of hospital cases in the country has not so far affected the incidence of puerperal sepsis. Another argument against midwives is the difficulty of finding material on which to train them. This difficulty, however, is probably not insuperable, especially if midwives trained in one State should be admitted to practice in another.

Marriage and Divorce.

Marriages have increased from 1925 to 1926 by 1·2 per cent. and divorces by 3·1 per cent. Reckoning each per 1000 estimated population the marriage-rate has fallen slightly (from 10·30 to 10·26), while the divorce-rate has increased from 1·52 to 1·54. The change for the country as a whole is not great, though in individual States there have been large changes. Thus the marriage-rate in Nebraska has risen by nearly 20 per cent., while the divorce-rate in Florida has increased by more than 25 per cent. In order to determine whether there is any relationship between the changes in marriage and in divorce-rates in the different States I have calculated the correlation coefficient which I find to be $+0{\cdot}26 \pm 0{\cdot}08$—sufficient to indicate that some relationship does exist. Nevada remains the popular resort for divorce with a wholly fictitious rate of 13·19. The highest marriage-rate is 21·6 in Florida, Maryland is second (16·3), and Delaware lowest (4·6).

The Toxicology of Tobacco.

From the digest of medical literature which he prepared recently for the Committee to Study the Tobacco Problem, Prof. Schrumf-Pierron, of Cairo, concludes that "the chief poison in tobacco-plant leaves is nicotine." [1] The more important of the possibly synergic poisons are, in his view, pyridine, ammonia, and collidine. Prussic acid, carbon monoxide, pyrolin, the phenols, &c., "have but a secondary and perhaps negligible effect." Since this summary was prepared two new poisons have been added to the list. In Germany, at the Kaiser Wilhelm Institute for Biochemistry, it has been discovered that there is derived from the plant pectin in tobacco an appreciable quantity of methyl alcohol [2] approximately 40 mg. in 20 cigarettes. In the United States at the North Dakota Agricultural College, Dr. Remington has found arsenic present in various brands of tobacco "in quantities greater than the amount generally permitted by the authorities in food." [3] Perhaps these poisons, too, belong amongst those that have a secondary or negligible effect. Even non-smokers consume moderate quantities of plant pectin (though not in the form of vapour) and the ills usually attributed to excessive smoking are not suggestive of arsenical poisoning. The intestinal symptoms which might be attributed to arsenic are associated rather with acute than chronic tobacco poisoning, and have already been saddled pretty surely on the nicotine content of the tobacco.

Tularæmia.

Warnings now appear with some regularity in the daily papers against the risk of contracting tularæmia in skinning and cutting up rabbits. The rather attractive title of this new disease gives rise to some interesting speculations. I have heard one member of a county medical society with classical leanings derive the "tular" from the Greek. A writer in the *Spencer Reporter* (Iowa) gives it a bacteriological origin. "The germ," he writes, "known to science as the toolaroo, is so slender that it can skate right through the human skin." The more prosaic associate the name of the disease with that of the district—Tulare County in California—where it was first discovered.

The American College of Physical Therapy sails from New York for London on May 26th. Their programme will take them also to Paris, Montreux, Zürich, Vienna, Berlin, and Copenhagen. The International League against Epilepsy sails from New York on March 17th and will also visit London before proceeding on its European tour. The American Psychiatric Association has also plans for a visit to Europe.

[1] Tobacco and Physical Efficiency. By P. Schrumf-Pierron, M.D. New York: Paul B. Hoeber. 1927. Pp. 134. $1.85.
[2] Neuberg, C., and Ottenstein, B.: Uebertritt von Methylalkohol in den Tabakrauch, Biochem. Zeit., 1927, clxxxviii., 217.
[3] Jour. Amer. Med. Assoc., 1927, lxxxix., 1883.

IRELAND.

(FROM OUR OWN CORRESPONDENT.)

Work of the Appointments Commission.

IN the midst of the discontent which has been roused among the members of the local authorities by the working of the Appointments Commission which has displaced the local authorities in regard to the appointment of officers, it is gratifying to read a considered opinion from an independent observer in favour of the working of the new system. In a public speech delivered recently the Bishop of Killaloe used the following words: "These offices are now filled by a detached body appointed so as to be free from the powerful local influences that very often directed appointments in the wrong direction. No doubt this is often disappointing to the local interests concerned; but I think that, on the whole, the people will find in the long run it is the best method, and that they will have the benefit of the very best appointments. The system will help to remove from our public life things that were a great source of corruption and jobbery, if we can believe public rumour, and I am afraid there was too much truth in it. No matter what they were made of, no matter how good their intentions, the local gentlemen on whom the responsibility of making appointments fell were not always free; they were embedded in a network of local connexions which deprived them of their freedom, and I often sympathised with their position. I believe that the new system is to their advantage and to the advantage of the public, though, of course, it may cut rather painfully in some instances."

QUEEN CHARLOTTE'S MATERNAL MORTALITY FUND. In response to the appeal initiated last May for £250,000 to help Queen Charlotte's Maternity Hospital to study the causes and conditions of maternal mortality, a sum of £60,000 has so far been raised.

EXTENSION OF ST. BARTHOLOMEW'S HOSPITAL.—The site of Christ's Hospital, which has been acquired by St. Bartholomew's, has now been cleared, and the new surgical block of 250 beds, with five operating theatres, can now be begun. It will cost £177,000. When means are available the governors intend to erect a block for paying patients at the corner of Little Britain and Smithfield.

Public Health Services.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

A BRIEF SURVEY OF 1926.

OPPORTUNITY was given us during the year that is past to comment on some 120 annual reports dealing with the public health work done in England, Wales, and Scotland in 1926, and an attempt may now be made to summarise a few of the points contained in these reports as an indication of the status of public hygiene.

General Sanitation.

In *housing* matters a slightly more optimistic vein is noticeable, though very few medical officers express themselves satisfied with the rate of progress. In most districts more houses were built in 1926 than in any year since the war. In some areas the natural increase in the population is now being provided for, and in a few something is being done to catch up the arrears of the years before and during the war. It has not been possible to close "unfit" houses to any extent, and little has been done in the matter of slum clearances. There is general agreement that as yet no provision has been made for the poorest class of the community, though in a few cases perhaps there are signs of a general upward movement. The need for cheaper houses is being expressed, and in many cases the amenities of the new municipal houses are spoilt by subletting.

There is a demand for regional planning and for control of the building which is going on along the lines of motor traffic regardless of drainage and water facilities and of æsthetic effect on the beauty of the country side. At the top of the social scale we have the disfiguring effect of week-end bungalows, while at the other end we have the nuisance from dwellers in vans and makeshift homes.

In the northern towns there is a much more determined effort to get rid of privy middens, pail-closets, and the like. Salvage schemes are being added to or replacing destructors. Financial restrictions hamper the perfection of sewage disposal schemes, and many medical officers are becoming despondent about the question of rivers pollution. Research is needed as to better means for dealing with wastes from collieries, paper works, sugar beet factories, &c.

In many counties the question of *water-supply* is a difficulty, and the new legislation with regard to dairy farms has brought the defective nature of our organisation for the equitable distribution of available water into the limelight.

More interest is being taken in the prevention of *atmospheric pollution*, and there is a healthy demand for regional smoke abatement committees, which may help to abolish the absurd permissible limits for black smoke, still obtaining in some of the mill towns.

Clean milk competitions increase in number, and much is hoped from the new Milk and Dairies Act. The production of designated milks makes some progress, but steps are needed to prevent ordinary milk being sold under fancy names. The working of the Tuberculosis Order has been a disappointment, and lacks the preventive point of view, as has been pointed out in our columns[1] by Dr. W. G. Savage. Compensation for bovine tuberculosis has been asked for by the agricultural interests for some 30 years, but sanitarians have always stipulated that it should be coupled with a well-thought-out scheme for reducing the prevalence of the disease. Now, apparently, we have the compensation without the scheme. In Scotland it would seem that better results are being obtained, and most of the counties are arranging for regular veterinary inspection of milk herds.

Infectious Diseases.

Immunisation is being more used for the prevention of diphtheria, for the protection of hospital staffs, and for dealing with outbreaks in residential institutions, and some local authorities are offering this protection to the children in their district. Good results are being claimed for antitoxin in severe cases of scarlet fever. The notified cases of encephalitis lethargica have been fewer than in the previous year, but the deaths proportionately more numerous, owing to deferred fatal results in cases notified in previous years. The establishment of joint special institutions for the survivors serving large areas has been mooted, and will no doubt take more definite shape when further experience has been gained at institutions such as Winchmore Hill.

Tuberculosis dispensaries are being more used for consulting purposes. No new treatment for pulmonary tuberculosis created any favourable impression during the year, but the value of artificial pneumothorax treatment for suitable advanced cases is becoming more generally recognised.

Maternal and Child Welfare.

In many reports it is shown that maternal mortality from childbirth and neonatal mortality have declined little, if at all, since the beginning of the century and antenatal work is usually held out as the remedy. In some cases antenatal advice is given by the health visitor, by the midwife in charge of a municipal maternity home, or by the infant welfare medical officer at a centre, but only in a few districts has this antenatal work developed into real preventive midwifery at antenatal clinics conducted by obstetricians of experience. The issue of the Puerperal Fever Regulations has met with a good response, and in many districts arrangements have been made for the provision of hospital treatment, special nursing in the home, a consultant's opinion, and bacteriological examinations.

The damage done to eyesight by ophthalmia neonatorum grows distinctly less, and most sanitary authorities have complied with the Ministry's suggestion to forgo efforts to recover the fee of the doctor called in by the midwife on account of the condition of the baby's eyes.

Orthopædic schemes for children of pre-school and school age have made decided progress, and more beds are being made available for non-pulmonary tuberculosis. General interest has been aroused in the question of the control of acute rheumatism in childhood, and the attempt to prevent heart disease, resulting in at least two municipal schemes—namely, in Paddington and Kensington—during 1927. Light treatment is being more extensively tried both at infant welfare centres and for tuberculosis. Most districts can claim during the last two decades an extraordinary reduction in infant mortality, apart from that of the first few weeks of life, but the statistics we have given show that for the best results we must not look to health resorts. One would have thought that the best possible advertisement for a health resort would have been low death-rates of mothers and infants. Health resorts cannot, of course, avoid some of their death-rates being swollen by the aged and invalid, who throng to them with the hope of prolonging their lives. This does not apply to the rates mentioned, which are calculated per 1000 births. There may be something in the suggestion made by one medical officer of a health resort that the mothers are too busy catering for visitors to have much time to attend to their own children. It might be pertinent to ask, "Should a health resort ever have a day nursery?"

Administration.

Many of the reports give evidence of progress towards unification of the public medical services with its broadening effect on the work of both the medical and the nursing personnel. Financial considerations have interfered with the increases of staff required to cope with the recognised need for better medical supervision of the pre-school child. The same remark applies to the school dental staff.

[1] THE LANCET, 1927, i., 722.

PUBLIC HEALTH IN THE LOCAL LEGISLATION OF 1927.

A SURVEY of the public health provisions in the Local Acts of Parliament passed in 1927 does not reveal many notable new developments. The Fleetwood Urban District Council has taken precautions to control the preparation of prawns and shrimps for sale. Every dealer in prawns and shrimps within the council's district who contracts with an employee or any other person for their preparation for sale for human food must enter on a special list the name and address of any person so contracting with him or so employed by him otherwise than on his own premises. No shrimps or prawns are to be supplied in pursuance of any such contract or employment until the name and address has been entered on the list, together with the date of delivery. The lists are to be open to inspection by the sanitary inspector. Notice of the new law is to be published locally by newspaper advertisements and handbills. The maximum penalty is fixed at 40*s*. Other instances of food legislation are more familiar. Buxton has prohibited the inflation of meat carcasses. Sunderland has taken precautions against the contamination of food intended for sale. Food poisoning has been made a notifiable disease at Aberdare, High Wycombe, and Swansea. Several local authorities enact penalties upon the original vendors of unsound food and authorise the search of sacks and parcels, carts and other vehicles. Food storage accommodation in dwelling-houses is regulated frequently; so is the manufacture of potted meats and ice-cream; another not uncommon clause is the restriction upon the conduct of a food business by an infected person, and there is also the usual prohibition on the sale or handling of food by a person suffering from tuberculosis. Fleetwood, Buxton, and High Wycombe arrange for compensation to employees who are made to cease work in order to avoid the spread of infectious disease. Other usual provisions against infection are those for closing Sunday schools and restricting entertainments in time of epidemics. Parents, too, are in several cases obliged to notify the head teacher of a child's infection. At Sunderland, Aberdare, and High Wycombe the furnishing of laundrymen's names can be insisted upon. Fleetwood provides for the removal of bodies where death is due to infectious disease; Leeds provides for the removal of infirm and diseased persons. The Liverpool Corporation failed to carry its proposed clause to make venereal disease notifiable, and the Bradford precedent was cited in vain. Fleetwood has arranged for the municipal supply of antidotes to doctors, and both Fleetwood and Sunderland dealt with infectious or parasitic disease in stables. Clauses about dust-bins, offensive trades, slaughter-houses, and the cleansing of filthy persons are nowadays too common to need mention. Attention should, however, perhaps be drawn to the special sanitary legislation of Leeds and West Bridgford. Leeds enacts that, when there is adequate water-supply and sewering, the corporation may serve the owner of a building with a notice requiring existing trough-closets to be converted into water-closets. If the existing trough-closet is not injurious to health and does not amount to a nuisance, the corporation will share the expense. In the case of West Bridgford, the local council may similarly insist on the conversion of slop-closets to water-closets and may require the provision of a separate receptacle for ashes and house refuse.

Public health, of course, is merely one aspect of the authorised statutory activities of local authorities. Those activities range from the provision of municipal golf courses (as at Liverpool) to the maintenance of grave spaces (as at Fleetwood) for a capital sum. The concession to the Bristol Water Company and the Reading Gas Company of power to give their employees the benefit of a recreation-ground is another welcome sign of the times. Other gas, water, and electricity undertakings indicate schemes of profit-sharing. Matlock Urban District Council seems to be the only local authority to consolidate its legislation in 1927, and to substitute a single orderly Act for a series of successive and overlapping enactments. It may be worth while to mention that H.M. Stationery Office publishes an index to the Local and Private Acts of the year, and that the index for 1927 has already been issued at the price of 2*s*.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED DEC. 24TH, 1927.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 255 (last week 212); scarlet fever, 1751; diphtheria, 1324; enteric fever, 52; pneumonia, 1561; puerperal fever, 35; puerperal pyrexia, 82; cerebro-spinal fever, 10; acute poliomyelitis, 9; encephalitis lethargica, 30; continued fever, 1; dysentery, 4; ophthalmia neonatorum, 85. There was no case of cholera, plague, or typhus fever notified during the week.

Deaths.—In the aggregate of great towns, including London, there was no death from small-pox, 4 (0) from enteric fever, 94 (33) from measles, 9 (1) from scarlet fever, 18 (3) from whooping-cough, 64 (15) from diphtheria, 61 (10) from diarrhœa and enteritis under two years, and 120 (17) from influenza. The figures in parentheses are those for London itself. The deaths from enteric fever outside London occurred in Walthamstow, Bolton, Sheffield, Sunderland, one each. Of the 61 fatal cases of measles outside London 10 were reported from Bristol, 17 from Manchester, 2 from Salford, and 3 each from Derby, Liverpool, and Sheffield, while the figure from Glasgow for the same week was 39. The number of stillbirths registered during the week was 274 in the great towns, including 53 in London.

MEDICINE AND THE LAW.

The Un-open Road.

AFTER the Christmas blizzard, when the business world is reckoning up its commercial losses and when members of the public are recounting their personal inconveniences, the disorganisation of the health services of the country deserves a few words. If roads are blocked for several days by snow medical practitioners are immobilised, and hundreds of homes where the doctor is wanted are deprived of help and distracted by increased anxieties. To scold at the forces of nature is as impotent as to fold the hands in resignation to whatever comes from the heavens. Xerxes, when his bridge across the Hellespont was broken by a storm, ordered the sea to receive 300 lashes; but he also ordered the chiefs of his bridge-building department to be decapitated. The Ministry of Transport must not be surprised if it is asked what contribution it made towards the immediate removal of the obstructions on our main roads last week. Allowance, of course, must be made for the suddenness of our climatic changes, but the official meteorologists can tell the Ministry of the recurrence of a severe winter and their day-to-day prognostications have lately been unusually confident. Allowance, too, must be made for financial stringency, but the resources of the Road Fund should be as readily available for removing snow-drifts as for other forms of maintenance and improvement. If it is said that the Minister is not so much to blame as the hundreds of independent local authorities, has the Minister taken any step to stimulate and coördinate their activity? Nobody expects him to be responsible for the condition of every country lane, but the plight of a city like St. Albans inside the London traffic area, where he has special powers and duties, was deplorable. When the general strike threatened the freedom of the roads tanks and the full civil and military resources of the country were employed. The recent absence of central organisation and initiative, at a season when volunteers

could have been readily enlisted, was the more conspicuous. Is there any general scheme of snow-plough distribution? The railways for the most part cleared their cuttings with alacrity and success; can the Minister's specialists in road engineering devise no method for the rapid clearance of snow by mechanical devices? Or are our expensive public roads to be deemed merely a fine-weather luxury? Restraint upon State interference may be excellent in principle, but even the prompt issue of accurate information as to the condition of particular routes—a task facilitated by wireless broadcasting—seems to have been surrendered to the private bodies formed by motorists for their mutual protection. The Ministry of Transport has its critics; it has lost a chance to discomfit them.

Correspondence.

"Audi alteram partem."

THE PRESENT POSITION OF THE VOLUNTARY HOSPITAL.

To the Editor of THE LANCET.

SIR,—Having read with the greatest interest the address by Dr. Graham Little, M.P., in your issue of Dec. 17th, 1927, I think it would be indecent of me to refrain from commenting on this matter. His address and conclusions bristle with points of controversy and fallacy like "quills upon the fretful porcupine." The obvious error into which he has fallen is that of describing a condition existing in a small area of London, and from that, generalising for the whole of the country. It is just as easy for any other person to generalise in a similar manner and, with your permission and subject to your correction, I will do so without going so very far from London after all.

The hospital which I have the privilege to direct is not a voluntary hospital but belongs to what I like to call the involuntary class, which nevertheless has to turn out the work. The area from which patients are drawn is 70 square miles, somewhat greater than half the metropolitan area of London (118 square miles), and from the very outset of its career the North Middlesex Hospital (Edmonton, N. 18) has been in the unique position of having to deal with patients from this dormitory area in all and every circumstance and illness, excepting notifiable and infectious diseases. A teaching hospital affiliated to a university is, of course, a thing apart, and will always attract some of the best men in the profession, but I do not think that Dr. Little is justified in his sweeping conclusions as far as many large non-teaching involuntary hospitals are concerned, as there *are* many such in the country, doing the most excellent work, with every facility for research and scientific treatment.

Under the heading "Bureaucratic Ideals," Dr. Little has an opportunity for introducing political views. As I am not a politician I cannot meet him on equal ground, except to suggest that it might be equally feasible to discuss some hospitals under the heading "Autocratic Ideals." These high-sounding phrases are merely words and definite actions speak much louder. Sir Arthur Stanley is true when he talks of "the great increase of confidence on the part of the general public in the treatment which they receive when they enter the hospitals," but this applies to *all* good hospitals, no matter what be the nature of their origin. Sir Arthur Stanley has been to see our work at Edmonton, and if I mistake not his words, he was very much impressed, not just by "bricks and mortar," but by other amenities common to all medical workers with proper ideals of service.

The author of "Voluntary Hospitals in Great Britain (excepting London)" paid us a visit ten days ago, and on the occasion of his visit, Mr. R. H. P. Orde, Director of Hospital Services, St. John of Jerusalem and British Red Cross Society, saw quite a series of items of interest, apparatus for advanced technique, &c., in use here which cannot be seen in any voluntary hospital in Britain.

Without proceeding further, I should like to ask Dr. Little two questions: (1) Will he come here and see an example of what I believe to be a properly efficient involuntary hospital? (2) Will he answer the question which has puzzled me for so long, What is the difference between (say) a poor-law appendix and a voluntary appendix?

I am, Sir, yours faithfully,

SPENCER MORT, M.S., M.D., F.R.S. Edin.,
Medical Superintendent and Surgical Director,
North Middlesex Hospital.

Silver-street, Upper Edmonton, N. 18,
Dec. 28th, 1927.

ANÆSTHESIA FOR OPENING RETRO-PHARYNGEAL ABSCESS.

To the Editor of THE LANCET.

SIR,—May I be permitted to take exception to one passage in Mr. Hasler's otherwise admirable instructions on the "Treatment of Emergencies in Anæsthesia" in your issue of Dec. 31st, 1927? The statement that "in cases of retropharyngeal abscess . . . if a general anæsthetic is required it should be given either by the intratracheal method or through a laryngotomy tube," will not, I think, meet with general acquiescence. The condition referred to is most usually met with in children and the necessary operation requires neither a long nor a profound anæsthesia. In fact the degree of narcosis needed for safe performance of the operation is generally insufficient for passage of an intratracheal catheter. This is also undesirable because of the likelihood of rupture of the abscess during the necessary manipulation. By having the child kept on its side during the administration of the anæsthetic, or with the head extended over the end of the table, with a gag slightly opened resting in the upper side of the mouth and the head below the level of the chest, an open anæsthetic can be given to these patients to a degree which permits the operator to do all that he wishes when, relaxation being reached, the gag is widely opened. By proper management of the child's position risk of inhaling pus is excluded and there is no need to resort to laryngotomy. For young infants it is often possible and expedient to do without any anæsthetic at all. It seems to me that it would be a mistake to allow Mr. Hasler's recommendation to assume unchallenged the authoritative position which its appearance in your pages bestows upon it.

I am, Sir, yours faithfully,

St. Mary's Mansions, Paddington, W., J. BLOMFIELD.
Jan. 2nd, 1928.

RECURRENT COLDS.

To the Editor of THE LANCET.

SIR,—I have read with special interest the letter of Mr. Mark Clement in your issue of Dec. 31st, 1927, because my own experience bears out the views expressed. For 12 consecutive months when house surgeon and house physician at the Liverpool Royal Infirmary I slept in the open air. At the same time I discarded underclothing and began to take a daily cold shower. This régime began in the mild April of 1926 and continued throughout the winter, when in spite of fogs and bad general conditions I did not catch cold. This is notable in view of the fact that in previous years I had difficulty in avoiding colds and that medical officers of large institutions seem prone to colds and minor ailments being, on the whole, overworked and underexercised. The bed used was of an ordinary type, protected from blowing rain by a tarpaulin. In winter it was the custom to spray the nose before retiring with a preparation as follows: Eucalyptol gr. i., camphor gr. i., menthol gr. i., liquid paraffin ℥ i.

I am, Sir, yours faithfully,

C. ALLAN BIRCH.

Royal Infirmary, Liverpool, Jan. 3rd, 1928.

SACRO-ILIAC SUBLUXATION.

To the Editor of THE LANCET.

SIR,—I was an assistant to Goldthwait of Boston for two years and naturally am interested in your annotation in the issue of Dec. 17th, 1927, and in Dr. Mennell's letter in the issue of the 31st, in regard to sacro-iliac subluxation. In Goldthwait's clinic I saw many cases of sacro-iliac strain and injury and meet with these cases frequently at the present time. It is important to differentiate between cases of strain and subluxation of the sacro-iliac joint. Strains of the sacro-iliac joint are of frequent occurrence. Actual subluxation, with demonstrable displacement clinically and by X rays occurs, but is not common. I can recall six cases in Boston, where I was convinced that subluxation had taken place. An X ray of the whole pelvis is required. It should be taken stereoscopically, when asymmetry at the symphysis pubis is the most valuable positive sign.

Strapping and suitable supports are of value only after the subluxation has been corrected by manipulation under an anæsthetic. They are to be regarded as necessary makeshifts, until re-education of the muscles of the trunk and pelvis, to correct the faulty statics, has been completed; for it is the tone and correct use of the muscles which control and maintain the integrity of the spinal joints to a greater degree than the ligaments. Smith Petersen has reported recently the end-results of 30 cases of relaxation of the sacro-iliac joint, with relief of symptoms by operation. He started his investigations as a sceptic and submitted all his cases to a most searching physical, neurological, and radiological examination. I saw a number of these cases and felt convinced of the soundness of his claims in this regard. I have had two cases of true subluxation during the last year.

From being endemic in Boston, strain and subluxation of the sacro-iliac joint have now become epidemic all over America. The reason for this lies, in my view, in the fact that traumatic affections of the sacro-iliac joint are common and that American surgeons are gradually learning the lessons which Goldthwait has taken so much trouble to teach. I would submit, further, that most of the obscurity in regard to cases complaining of "low back pain" is explained by a general lack of knowledge as to how a systematic physical examination should be carried out. There is no easy road for learning it, and without close study, also, it is difficult to interpret the facts properly. Cases of backache and sciatica are capable of scientific analysis and classification at the present time, and they include the important and frequent class of case which is the subject of your interesting annotation. I hope it will stimulate interest in this country, for there is no doubt that these cases are very largely neglected, important as they are in regard to frequency, lack of accurate diagnosis, and in knowledge of the appropriate treatment of the different lesions.

I am, Sir, yours faithfully,

Edinburgh, Jan. 1st, 1928. W. A. COCHRANE.

THE PREVENTION OF DIPHTHERIA.

To the Editor of THE LANCET.

SIR,—The letter from Dr. S. Rowland, M.O.H. for Northampton, in your issue of Dec. 24th, 1927, appears to suggest that he has some doubt as to the value of immunisation in diphtheria. It would be interesting to know: (1) whether Dr. Rowland has himself had any personal experience of this method; (2) exactly what hospitals he refers to in the last paragraph of his letter where he states that "From what one has heard first hand from those who have worked in hospitals where Schick's method was practised, I feel for the present we must return for Schick the same verdict you brought in for B.C.G.—viz., not proven."

Such statements should, I feel, not be made without giving specifically the names of the hospitals concerned and the workers responsible for such statements. Dr. Rowland quotes an article by Drs. Harries, Macfarlane, and Gilhespy, but does not mention that the writers are among those most convinced of the value of the Schick method and, in fact, that the last paragraph of the article which he quotes states that the best method of rendering a "carrier" innocuous is to ensure that he should live "amongst children who have also been rendered immune by the safe and certain means provided by toxin-antitoxin."

The rest of Dr. Rowland's letter does not appear to deal with the question at issue. In the report issued by Dr. J. Graham Forbes upon "The Prevention of Diphtheria" Dr. Forbes showed that while the (septennial) attack-rate from 1904–24 had risen from 11·2 to 19·1, the death-rate had also risen from 0·99 to 1·33, showing that the suggested explanation of the increased incidence given by Dr. Rowland is a fallacious one. As far as I know every medical officer who has had practical experience of the Schick method, both as regards the test and as regards immunisation, is convinced of its extreme value in the prevention of diphtheria.

The report of the Public Health Committee of the London County Council can only be considered by such medical officers as a highly unsatisfactory one. It has been demonstrated in Edinburgh that immunisation among children can only be carried out satisfactorily on a large scale through the school organisations, and it is a great pity that the Edinburgh system could not have been brought into force in London. The fact that diphtheria has waves of high and low incidence has nothing to do with the matter. The point at issue is that we have in the Schick method the means of preventing susceptible children from contracting diphtheria during their school life and parents should have the means at their disposal of availing themselves of the method. Whether immunisation would lessen to any great degree the number of cases of diphtheria would obviously depend on the number which were immunised each year.

I am, Sir, yours faithfully,

A. H. G. BURTON,

Jan. 2nd, 1928. Medical Officer of Health, Ilford.

AN OPERATION FOR THE ALLEVIATION OF DEAFNESS.

To the Editor of THE LANCET.

SIR,—The idea of relieving the deafness in cases of marked Eustachian obstruction, with its concomitant non-suppurative tympanic lesions, by providing a permanent opening for ventilation between the mastoid antrum and the adjacent portion of the meatus, occurred to others many years ago. The claims, however, of Malherbe and Garnault have neither been confirmed nor accepted by competent and reputable otologists, either here or abroad;, and I am only performing an obvious duty in pointing out that the extensive operative interference advocated by Mr. Nesfield is, by a general consensus of otological opinion, considered useless and therefore unjustifiable in the class of case under discussion.

Can Mr. Nesfield bring forward cases which were seen and tested by a trained otologist, both before and after treatment, in which he alleges substantial improvement to have taken place? If not, I suggest his endeavouring to find an experienced otologist who could be induced to consent to collaborate with him, in his future aural ventures, if he would overcome the scepticism of authority.

Although I have stated without misplaced modesty and timidity what I believe to be the position of authority, I admit that there is just a possibility—almost a forlorn hope—that authority may be in error here and Mr. Nesfield may be right and therefore a genuine benefactor to sufferers from obstinate obstructive catarrhal deafness.

I am, Sir, yours faithfully,

London, W., Jan. 3rd. WILLIAM HILL.

To the Editor of THE LANCET.

SIR,—In his book, "Otitis Media (Mastoid Disease)," which I have seen for the first time, Mr. Heath says

(p. 4): "Mastoid disease is one of the commonest ailments with which our army is troubled." I was the surgical specialist of the Lucknow Division as long ago as 1906, and so naturally saw a great deal of mastoid disease, as aural surgery, particularly mastoid disease, was not separated from general surgery. A civil surgeon in the old Indian Medical Service could not be a specialist; he had to deal with every branch of medicine and surgery, and be an expert in every department. As a matter of fact, specialism quite often impedes advance, as it limits scope and cramps the horizon. This may possibly be the reason that general surgeons have been responsible for outstanding advancements in the special branches—e.g., enlargement of the prostate, stone in the bladder, cataract, and so forth.

Acute mastoids are naturally a common emergency, and so I have had to operate on many hundreds. In 1901 I was taught Stacke's operation at St. Mary's Hospital. But before 1906 I, like many other surgeons, attempted to preserve the hearing in acute mastoid disease by draining the middle ear through the mastoid without destroying the eardrum and ossicles. I was in India in 1906, and did not know of Mr. Heath's article in your journal, but the important point is that *Mr. Heath's operation is for otitis media, otorrhœa, and perforation of the ear-drum.* He says: "... I exhibited 10 cases ... their perforated drums had healed." That his operation is for mastoiditis is clearly demonstrated by the advertisement of his book on the cover of THE LANCET. My attempt has been to alleviate deafness by operating on patients with normal ear-drums, and whose middle ears are not inflamed or purulent.

Wilde, Schwartze of Haale (1873), Stacke (1892), Ballance and Macewen were, I believe, the pioneers who taught us to gouge through the mastoid to hidden pus, and clear away all diseased bone. My aim has been to bore through the mastoid with as little injury as possible to the mucous membrane of the air cells, so as to produce a membrane-lined channel connecting the middle ear with the external auditory canal—i.e., *in effect to make a new Eustachian tube.* It must be clearly understood that I make this channel on ears healthy except for deafness. I know that to improve deafness in such cases Mr. Heath's treatment has not been to operate but to blister the ear-drum, because some of these (blistered) patients have since come to me, and I have made on them the channel I describe, and have alleviated their deafness.

Mr. Barford has been most kind, and I appreciate his remarks. Nearly all my cases have been frequently catheterised, and an attempt made to open their Eustachian tubes with bougies. Here again one has to recognise that the Eustachian tube opens into a small closed space (the middle ear), so that air is blown into a closed tube. It is, therefore, not surprising that mucus is not dislodged, and, if dislodged, is blown into the middle ear. On the other hand, when a channel has been made connecting the middle ear and the external auditory canal, air can most easily be blown right through the Eustachian tube and middle ear out of the external auditory meatus. For my part I prefer passing a stream of mild antiseptic fluid from the external auditory meatus through the middle ear and Eustachian tube into the pharynx.

The operation, if performed with phenolaine (a local anæsthetic), and very light chloroform anæsthesia is without risk. Why should we therefore hesitate to operate when the usual remedies of nasal douches, nasal operations, removal of tonsils and adenoids, catheterisation, &c., of the Eustachian tubes fail? I shall always be pleased to demonstrate cases.

I am, Sir, yours faithfully,

V. NESFIELD, F.R.C.S.,
Major, I.M.S. (ret.).

Sandhurst, Kent, Jan. 2nd.

AURAL SYSTEMIC INFECTION.

To the Editor of THE LANCET.

SIR,—Dr. R. D. Owen's article in your issue of Dec. 31st, 1927, prompts me to record that the treatment which I have found of the greatest value in such cases is the administration of *Scarlet Fever* Antistreptococcus serum (P., D. and Co.). I used this first in April, 1927, in a case of blood infection with hæmolytic streptococcus from an acute mastoiditis, and the effect can only be described as miraculous. Since that date I have used the serum in other cases, always with satisfactory result; it should be noted that the cases to which I refer were patients where there was no question of scarlet fever. I need not here go into details of these cases, as I hope shortly to publish a full account. Meantime I wish to emphasise the value of this treatment in the hope that others may find it helpful. Large doses may be given; in my first case so treated the serum was given intravenously in doses of one million units, repeated daily for ten days.

I am, Sir, yours faithfully,

H. ROSS SOUPER,
Aural Surgeon, Royal Aberdeen Hospital for Sick Children.

Dec. 31st, 1927.

To the Editor of THE LANCET.

SIR,—Dr. Owen has described a fairly typical case of systemic infection occurring in the course of mastoiditis. He would have been saved considerable anxiety as to the condition of the lateral sinus if he had carried out a small point of operative technique, which I have advocated elsewhere. In such cases, the lateral sinus should be freely exposed at the primary operation for half an inch or more, so that its subsequent state can be easily observed through the mastoid wound. If pulsation be observed during the periods of high temperature it is certain that thrombosis in the sinus is not present, and hence ligation of the jugular vein in the neck is unnecessary.

I am, Sir, yours faithfully,

HAROLD KISCH.

Wimpole-street, W., Jan. 2nd, 1928.

WELFARE OF THE BLIND.—In view of the continued development of work among the blind owing to the operation of the Blind Persons Act, 1920, and the new problems constantly arising in connexion with this service, the Minister of Health has reappointed the Advisory Committee on the Welfare of the Blind for a further period of office. The Committee has been constituted so as to afford representation to the local authorities concerned with the working of the Blind Persons Act, 1920, and to voluntary agencies for the blind, as well as to organised blind workers. The chairman is the Right Hon. G. H. Roberts, and among the members are Dr. J. J. Butterworth, Dr. R. A. Lyster, and Dr. H. A. Powell. Mr. F. M. Chapman, of the Ministry of Health, will act as secretary.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—On Wednesday, Jan. 11th, at 3 P.M., at the Royal Eye Hospital, St. George's-circus, Mr. Griffith will give the first of a series of clinical demonstrations. On Jan. 26th, at 1.30 P.M., at St. Bartholomew's Hospital, Sir Thomas Horder will give a medical demonstration, and on Jan. 23rd, at 2 P.M., at the Queen Mary's Hospital, Stratford, Mr. A. E. Mortimer Woolf will give a surgical demonstration. On Monday, Jan. 16th, at 5 P.M., Sir James Purves-Stewart will lecture on Acute Drunkenness. This lecture and demonstrations are free to members of the medical profession. From Jan. 9th, for a fortnight, from 10.30 A.M. to 5.30 P.M., at the North-East London Post-Graduate College (Prince of Wales's General Hospital, Tottenham) a special course will be held in medicine, surgery, and special department work, and will consist of demonstrations, ward-rounds, lectures, and operations. Between the same dates a course in diseases of children, organised by Dr. Bernard Myers, will be held at the Children's Clinic, the National Heart Hospital, the Royal Waterloo Hospital, the Hospital for Consumption, Brompton, and the Royal National Orthopædic Hospital, and will occupy most mornings and afternoons. From Jan. 16th–27th, at the National Hospital for Diseases of the Heart, an all-day course will be given (entries limited to 20), and from Jan. 17th to Feb. 11th, on Tuesdays and Saturdays, at 11 A.M., at the Bethlem Royal Hospital there will be a course of lecture-demonstrations on psychological medicine. Information, syllabuses, tickets, and copies of the *Post-Graduate Medical Journal* may be had from the Secretary of the Fellowship at 1, Wimpole-street, London, W. 1.

Obituary.

SIR PERCY BASSETT-SMITH, K.C.B., C.M.G., F.R.C.P. LOND., F.R.C.S. ENG.

WE regret to chronicle the death of the distinguished naval officer and pathologist, Rear-Admiral Sir Percy Bassett-Smith, which occurred on Thursday, Dec. 29th, in his sixty-seventh year.

Percy Bassett-Smith was the son of Mr. William Bassett-Smith, of St. Albans, and received his general education at St. John's College, Hurstpierpoint. He entered the Middlesex Hospital as a young medical student, qualified as L.S.A., served the hospital as house physician to Sir Richard Douglas Powell, and entered the Naval Medical Service in 1883 at the age of 22, having now obtained the English double qualification; those who knew him personally will reflect that he must have looked a small lad for the responsibilities with which his commission endowed him. His opportunities of active service began before those of his actual contemporaries in age, for he served in the Egyptian Expedition despatched to re-establish the authority of the Khedive in 1882, and, his ship being engaged in military and naval operations during the next two years, he obtained the Egyptian medal and the Khedive Star. His successful start was followed by appointments in which he showed striking qualities of scientific as well as official nature; he obtained the Gilbert Blane gold medal for the best journal kept by an officer in medical charge of a warship, and in 1899 he was specially promoted fleet-surgeon. In the following year he was appointed lecturer on tropical medicine and hygiene at Haslar, where much of the research work was done that later formed the subject of valuable writing.

SIR PERCY BASSETT-SMITH.

Photograph by Elliott & Fry.

In 1906, having taken the tropical diploma at Cambridge, he won the Cragg's prize awarded for original research work by the London School of Tropical Medicine. In 1911 he was made C.B., and in 1912 was appointed professor of pathology and lecturer on tropical medicine at the Royal Naval College, Greenwich. This post he held for nine years, when he retired with the rank of surgeon rear-admiral and was created K.C.B., while his professional position had been recognised during his tenure of the post by election in 1916 both as F.R.C.P. Lond. and F.R.C.S. Eng. In 1918 he received the C.M.G.

The cessation of official connexion with the Admiralty left him free to practise as a consultant physician. He was immediately appointed to the staff of the City of London Hospital for the Diseases of the Chest and Lungs, and after three years as assistant physician he received charge of wards, so that his energy and enthusiasm received a full outlet. He had joined the staff at an age when most men would have considered that they had earned a rest, but he threw himself into the new duties with zeal and devotion, as was well displayed in his action, after appointment as in-patient physician, in voluntarily continuing his out-patient work. For this purpose he went down to the hospital regularly every Saturday afternoon, and when the artificial sunlight department was opened at the institution he added the supervision of this to his other responsibilities. His long experience at Greenwich made him keenly interested in all developments of clinical pathology, and any new laboratory test, which had a reasonable claim upon attention, was sure of open-minded reception from him. One of his colleagues writes: "Sir Percy was a man of quick and ready sympathies, and was always ready to help. A generous kindness characterised everything he did, and the writer never knew him to pass an uncharitable judgment." That summary of Bassett-Smith as a hospital officer may be applied to his general activity in public affairs. On the Council of Epsom College he was a regular attendant, an advocate of all developments of the institution as a public school, and a kindly scrutineer of the claims for scholarships and pensions.

He served for two years as President of the Royal Society of Tropical Medicine and Hygiene, and was tropical specialist to the Appeal Board of the Ministry of Health. No text-book came from him, and his writings were based entirely upon his work in the Navy. In this way he acted for a time as assistant editor of the *Bulletin of Tropical Disease*, issued by the Bureau of Hygiene and Tropical Diseases, and made many useful contributions to medical literature through this and various journals and medical systems. He wrote on the poisons of snakes and fishes in the "Encyclopædia Medica"; on undulant fever in Byam and Archibald's "Practical Medicine in the Tropics," in THE LANCET, and in the *Journal of Tropical Disease and Hygiene*; and on parasitic splenomegaly in the *British Medical Journal*. The three last papers from his pen were published in our columns—The Carriers of the Meningococcus: A Year's Record, in 1918; The Preservation of Lemon Juice in 1920; and Prevention of Scurvy in the Navy, 1921. All three papers exhibit similar qualities of care, accuracy, and inclusiveness; the last, which was read before the War Section of the Royal Society of Medicine, was a practical contribution to our knowledge of the prophylaxis of scurvy. Bassett-Smith, in fact, placed both the Navy and Army in his debt by his work in preparing the efficient and portable antiscorbutic remedy which he exhibited in lozenge form to the Society.

One who as a colleague was familiar with Bassett-Smith's ideals and conduct of work writes as follows:—

Sir Percy Bassett-Smith will be missed by many, as there were many who were glad to call him friend. There was a good deal of the sailor about him, for, although he spent most of his life in hospitals and laboratories ashore, he carried with him a certain cheeriness and breeziness which endeared him to his colleagues. An affectionate regard led to his being often called the "little gentleman," and the title was well bestowed. He was a man who never stooped to anything mean or underhand, nor did he speak evil of his neighbours. He was a friendly soul, full of vigour, persistence, and energy, and it was these qualities of mind and body, together with a ripe experience and a sound and sane outlook on life, which led to his success in various directions. To him idleness was abhorrent and when, much to his sorrow, he had to give up his life's work in the Navy, where, by the way, he gained for himself a unique position, he plunged into a maze of activities, examining and treating patients, examining students in tropical medicine, continuing his duties as sectional editor for the Bureau of Hygiene and Tropical Diseases, taking a prominent share in the work of the Royal Society of Tropical Medicine and Hygiene, of which for two years he was President, much to his joy and satisfaction, lecturing, attending meetings and demonstrations and keeping himself generally abreast of the times. He was not a good public speaker; he had no great

facility with the pen, but he had a thorough knowledge of the subjects in which he was specially interested, notably undulant fever and the deficiency diseases, a good general knowledge of laboratory and clinical work, and he never spared himself. Above all he had, like the service to which he was proud to belong, a great and abiding sense of duty, and so he earned the liking and respect of his fellows and rose to high office amongst them. He died in harness, as no doubt he would himself have chosen, for he would have dreaded any approach to the stage of the "slippered pantaloon"; but his loss will be severely felt in those circles wherein he moved and where, as the "little gentleman," he was ever welcome.

Sir Percy Bassett-Smith married Constance, daughter of the Rev. F. Hastings, who died two years ago, by whom he leaves two daughters. His death took place at St. John's Hospital, Lewisham, and was the result of septicæmia incurred at a post-mortem examination.

MICHAEL JOSEPH MAHONY, D.S.O., M.D. N.U.I.

Dr. Mahony died on Dec. 23rd at his home at Stoneycroft, Liverpool, where he had practised for some 35 years and had gained the affection of a large circle. Born at Waterford, the son of Mr. Richard Mahony, he was educated at St. Vincent's College, Castleknock, and graduated in medicine in the Royal University of Ireland in 1890. Two years later he started practice in Liverpool, and in the South African war he held a combatant commission in the Liverpool Volunteers, being awarded the Queen's medal and three clasps. After the war he remained for some time in South Africa, but eventually returned to Stoneycroft to his ever-increasing practice, and to his public work in connexion with numerous institutions in the neighbourhood. These included the Hospice for the Dying in Liverpool, of which he was one of the founders. On the outbreak of the late war Dr. Mahony went to France as major in the Royal Army Medical Corps (Territorials) attached to the 9th King's Liverpool Regiment. At the end of 1915 he was invalided home but later rejoined for service on the Somme with the 5th battalion. He was one of the first three officers of the 55th Division to be recommended for the D.S.O., which he received in 1917, and in addition he was twice mentioned in despatches, and was awarded the Médaille de reconnaissance française (en argent).

Dr. Mahony's death followed closely on that of his father, and they were buried together at West Derby on Dec. 27th with military honours.

ARTHUR GOULSTON, M.D. CAMB.

Dr. Arthur Goulston, who died at Charlcombe Rectory, Bath, on Dec. 22nd, received his medical education at Cambridge and St. Thomas's Hospital, and after qualifying as M.R.C.S. Eng. in 1888, settled in practice at Exeter. In 1911, 23 years after qualification, he graduated as M.B. Camb., and in the following year proceeded to the M.D. degree with a thesis on the beneficial effects of cane sugar on the myocardium in certain forms of heart disease. In this subject he had interested himself for some eight years, and he published a number of articles expounding the favourable views he formed. In 1914 these were further set out in a book entitled "Cane Sugar and Heart Disease," in which he explained that he had first tried the treatment because sugar was used in the German army and amongst Alpine climbers to combat undue cardiac strain. His clinical investigations brought him the Hunterian Society's medal in 1912. He remained in general practice at Exeter until some six years ago, when he moved to London. Dr. Goulston held the Volunteer Decoration. Last year he retired and went to live at Bath.

WE are asked to state that the Central Information Bureau, which has its offices in the Kaiserin Friedrich-Haus, Berlin, N.W. 6, Luisenplatz 2/4, gives information free of charge in all matters relating to medical questions in Germany.

Medical News.

UNIVERSITY OF LONDON.—At a meeting of the Senate held on Dec. 14th, 1927, it was resolved to institute a chair of chemistry as applied to hygiene, and a chair of public health, both tenable at the London School of Hygiene and Tropical Medicine.

University College.—A course for the Diploma of Public Health opens early this month. Details may be had from the Secretary.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—Six Hunterian lectures on Factors Concerned in the Growth of the Human Body will be delivered in the theatre of the College, Lincoln's Inn-fields, by Sir Arthur Keith, F.R.S., Conservator of the Museum, at 5 P.M., on Mondays, Wednesdays, and Fridays, Jan. 16th, 18th, 20th, 23rd, 25th, and 27th.

CONFERENCE ON RHEUMATIC DISEASES.—A conference on rheumatic diseases is to be held at Bath on May 10th and 11th. Sir George Newman will act as President of the conference, of which the three sessions will be devoted respectively to social aspects, causation, and treatment. The local hon. medical secretary is Dr. Vincent Coates, 10, Circus, Bath.

ROYAL INSTITUTE OF PUBLIC HEALTH.—A course of lectures on Problems of Forensic Medicine will be given at the Institute, 37, Russell-square, London, W.C. at 4.30 P.M., on Wednesdays, from Jan. 18th to March 14th. The lecturers will be: Mr. Roland Burrows, Dr. Godfrey Carter, Dr. Nathan Raw, Dr. Norwood East, Dr. W. M. Feldman, Dr. Whitley MacFall, Sir Robert Armstrong-Jones, Dr. Roche Lynch, and Dr. Robert Donaldson. Particulars will be found each week in our Medical Diary. Students and members of the medical profession are invited to attend.

ORTHOPÆDICS AT BIRMINGHAM.—Two years ago the Birmingham Cripples' Union and the Royal Orthopædic Hospital were amalgamated under the cumbrous title of "The Birmingham Cripples' Union and Royal Orthopædic and Spinal Hospital (Amalgamated)." The designation has now been altered, with the King's permission, to "The Royal Cripples' Hospital, Birmingham."

PRESERVATIVES IN FOOD.—The Public Health (Preservatives, &c., in Food) Regulations came into force on Jan. 1st so far as they relate to butter, cream, and articles of food containing preserved bacon, ham, egg yolk, or cream. As it may not be practicable to get rid of all stocks of preserved butter at once the Minister of Health has suggested to local authorities that they should refrain from instituting legal proceedings during the first few weeks of the year, if they are satisfied that reasonable efforts have been made to clear old stocks.

HUNTERIAN SOCIETY.—The Hunterian lecture will be given at 9 P.M. on Monday, Jan. 16th, by Dr. Howard Kelly, of Baltimore, U.S.A., who has chosen to speak on Emergent Gynæcology. The annual dinner will be held on Thursday, Feb. 9th, at the Hotel Victoria, and the Hunterian oration will be given on Monday, Feb. 27th, at the Mansion House by Dr. Anthony Feiling. His subject will be Sciatica—Its Varieties and Treatment. On Monday, March 19th, at 7.30 P.M., there will be a dinner meeting at Simpson's Restaurant, Cheapside, when Dr. Robert Hutchison and Sir Farquhar Buzzard will open a discusson on Hiccup. The last fixture of the season will be the annual general meeting on April 23rd.

ROYAL SOCIETY OF MEDICINE.—The new session promises combined discussions on a number of important topics, among them the influence of naso-aural sepsis on the lungs and gastro-intestinal tract (Jan. 11th), in which the three sections of Laryngology, Medicine, and Odontology will take part, and a special discussion on cutaneous mycosis in the tropics (Jan. 25th), arranged jointly by the sections of Tropical Diseases, Dermatology, and Comparative Medicine, to which members of the War Section are specially invited. At the Section of Psychiatry on Jan. 10th Dr. William Brown will read a paper on theories of suggestion. At the Section of Electrotherapeutics on Jan. 20th Prof. Sidney Russ and Dr. T. F. Cotton will introduce a discussion on diathermy in relation to circulatory disturbances, and on Jan. 27th Dr. J. E. McCartney will make some observations on diphtheria carriers to the Section of Epidemiology. The next social evening will, as already announced, be held on Monday, Jan. 16th, when Dr. Jane Walker will give an illustrated address entitled Saints, Medicine, and Surgery. The Secretary of the Society will be glad to receive the names of Dominion and foreign physicians who are visiting this country, in order that invitations to attend the social evening may be sent to them.

SOCIETY FOR THE STUDY OF INEBRIETY.—At 4 P.M. on Tuesday, Jan. 10th, at the rooms of the Medical Society of London, 11, Chandos-street, W., Prof. Hugh MacLean will open a discussion on Alcohol and Alcoholism in Relation to Problems of Nutrition and Health. Members and Associates may introduce visitors.

LECTURES ON INFANT CARE.—A course of advanced lectures especially intended for creche nurses and probationers have been arranged by the National Association for the Prevention of Infant Mortality and the National Society of Day Nurseries, and will be held on Thursdays, from 7.30 to 8.30 P.M., from Jan. 12th to March 15th, at Carnegie House, 117, Piccadilly, London, W.

SOCIETY OF MEDICAL OFFICERS OF HEALTH.—The first meeting of this year will be held at 5 P.M. on Jan. 20th, when Dr. Walter Elliot, M.P., and Prof. R. H. A. Plimmer will speak on Recent Advances in the Knowledge of Food. On Feb. 17th, at the same hour, Dr. G. F. Buchan and Dr. A. F. Cameron will open a discussion on the Control of Small-pox, and on April 20th Sir Robert Philip, Dr. W. M. Willoughby, Prof. E. L. Collis, and Prof. Major Greenwood will address a general meeting at Bath on the Causes of the Decline in Tuberculosis Mortality. The first two meetings will be held at 1, Upper Montague-street, Russell-square, London, W.C.

MEDICAL SOCIETY OF LONDON.—The spring session opens on Monday, Jan. 9th, with a pathological evening; a fortnight later the treatment of pernicious anæmia will be introduced by Prof. F. R. Fraser and discussed by Sir William Willcox and Dr. Herbert French. Other subjects on the agenda for Monday evening meetings are the use and abuse of ultra-violet therapy, the scope of surgery in the treatment of chronic rheumatoid and osteo-arthritis, the carrier problem, and recent advances in the treatment of cancer of the cervix uteri. On three evenings in February and March Dr. F. J. Poynton will deliver the Lettsomian lectures on rheumatic heart disease in childhood. The annual dinner will be held at the Trocadero Restaurant on Thursday, March 8th, while the session will finish up with the general meeting on Monday, May 14th, when Sir Archibald Garrod will deliver an oration entitled Lessons on Rare Maladies.

ROYAL SOCIETY.—Applications are invited for a Foulerton Research Professorship, tenable for five years and renewable for further periods. The holder will be expected to undertake original research in medicine or the contributory sciences, on lines approved by the committee of the Foulerton Research Fund. In awarding professorships the chief consideration will be the candidate's ability rather than the subject of his research. The professor will devote his whole time to investigation, except that he may give a limited course of instruction to advanced students; in special cases, however, the holder of a paid academic or other scientific appointment may be elected, provided that the duties of this appointment are only subsidiary to those of his Foulerton professorship. Members of all nationalities and both sexes are eligible, and applications must reach the Society not later than Sept. 30th. Further particulars may be found in our advertisement columns.

JAMES MACKENZIE INSTITUTE FOR CLINICAL RESEARCH.—At a meeting held on Dec. 6th, 1927, Sir George Lenthal Cheatle read a paper entitled Some Recent Views on Carcinoma as Applied to the Colon. He described two types of epithelial hyperplasia which he had found in his research on the breast. The first type, associated with increase in peri-canalicular and peri-acinous connective tissue, was seen in the breast of the newly-born infant and at puberty and might therefore be regarded as physiological. He protested against the use of the term chronic mastitis in this connexion, since the condition was not inflammatory. He did not agree that this hyperplasia was secondary to increased vascularity, but considered that the increased vascularity present was the result of greater functional activity. In the second type of hyperplastic change the epithelial cells tended to heap themselves upon one another, and this process led to the formation of cysts and papillomata. In the colon he had been unable to discover anything comparable to the first type, but the second type of overgrowth was common. In the breast and colon such papillomata might be innumerable and they were commonly associated with carcinoma. The epithelial activity was, in his opinion, always the essential change. A cell, having taken on the malignant character, invaded surrounding tissue and at this stage the invasion was the only proof of its malignancy. The lecturer described the following types of spread in the colon: (*a*) limited spread in the submucous lymphatics; (*b*) direct spread of epithelial cells in the circumrectal fat; (*c*) embolic spread (rarely); (*d*) diffuse explosive local spread in all tissues; and (*e*) invasion of radicals of proctal vein. The last of these, he said, explained the frequent invasion of the liver in carcinoma of the bowel.

SOCIETY OF APOTHECARIES OF LONDON.—A Livery Dinner of this Society was given on Tuesday, Jan. 3rd, to the Lord Mayor of London and Sheriffs, when occasion was made for the presentation to Sir F. Gowland Hopkins of the Society's medal for distinguished therapeutic research. The Master, Dr. R. Whiteside Statham, presided, supported by Lieut.-Colonel C. T. Samman, R.A.M.C., and Dr. H. J. Ilott, the Wardens.

After the loyal toasts, the Master proposed the health of the Lord Mayor, Sir Charles Batho, associating the Sheriffs with his words. He briefly narrated some points in the history of the Society, and explained how it came to lose its place among "the great twelve," although ancient descent could be claimed for it from the herb merchants of biblical days, while the name apothecary was derived from Galen's word for a herb repository. The incorporation of the Society actually dated, he said, from the reign of James I. whose apothecary, Gideon Delaune, was the principal medium for securing the charter and finding the money for the original hall. He reminded the audience that the bust on the bracket at the upper end of the hall represented this famous man, who is reported to have lived till the age of 97, and to have married in middle life and been the father of 37 children by one spouse. The Master closed his speech by referring to the activity of the Society in instituting a diploma in midwifery, the arrangements for which were now complete.

The Lord Mayor and Mr. Sheriff Davenport having replied, the Master then presented the gold medal of the Society for his work on nutrition to Sir Gowland Hopkins. He described him as our greatest living biochemist, filling the first university chair in that subject which had recently been instituted at Cambridge, and referred to the spread of exact knowledge in regard to diet that had followed upon the discovery of the vitamins from A to E. He hoped that the dinner that evening had been properly selected in respect of vitamins.

Sir Gowland Hopkins, in returning thanks for the medal, disclaimed having done any work in respect of vitamin E, but said that from experiments on rats the presence of this vitamin appeared to quadruple procreative powers. Speaking generally of the subject of nutrition, he held that no section of the human race had ever been properly nourished, whether we were considering aborigines who ate berries or, at the other end of the scale, the feasts of city magnates. The vitamins were certainly well represented at the present dinner in quantity, if not in distribution. He held that the disabilities of man, due to age-long malnutrition, were undoubted, and that the whole subject of nutrition formed urgent material for research.

Colonel Samman, in proposing the health of the guests, made special mention of Sir Frederic Hallett, whom he congratulated on his recent honour, calling his work in the cause of medical education admirable and far reaching. He associated with the toast Dr. Graham Little, Member of Parliament for the University of London, and Mr. Briscoe, Master of the Worshipful Company of Armourers and Brasiers.

Dr. Little, in reply, told of the progress of the University of London, and suggested that the City Companies should turn their attention to their own university rather than to the provincial institutions, for each of the Companies might very well endow the University with a chair or scholarship associated with their own titles. He suggested to the Master of the Cutlers Company, Dr. Atwood Thorne, and to the Master of the Butchers Company, Mr. Killby, who were among the guests, that a chair in operative surgery would be appropriate.

The speeches were interspersed with some charming singing by the Chauntry Gleemen.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

TUESDAY, Jan. 10th.—5 P.M., THERAPEUTICS. 8.30 P.M., PSYCHIATRY. Paper: Dr. William Brown: Theories of Suggestion.

WEDNESDAY.—8.15 P.M., LARYNGOLOGY, MEDICINE, ODONTOLOGY. Special Discussion on the Influence of Naso-oral Sepsis on the Lungs and Gastro-intestinal Tract. Openers: Mr. E. D. D. Davis and Mr. C. A. S. Ridout (for the Section of Laryngology), Dr. R. A. Young and Dr. T. Izod Bennett (for the Section of

Medicine), Mr. J. G. Turner and Mr. A. Bulleid (for the Section of Odontology).

THURSDAY.—8 P.M., NEUROLOGY. Clinical Meeting at the National Hospital, Queen-square, W.C.

FRIDAY.—5.30 P.M., CLINICAL. (Cases at 5 P.M.) Cases: Dr. F. Parkes Weber: (1) Non-operated Mammary Carcinoma of Fifteen Years' Duration in a Woman with Strongly Positive Wassermann Reaction. Dr. Bernard Myers: (2) Specimens from a Case of Erythro-leukæmia. Dr. Philip Figdor: (3) A Case of Congenital Heart Disease. Other cases will be shown. 8.30 P.M., OPHTHALMOLOGY. (Cases at 8 P.M.) Papers, &c.: Mr. W. Stewart Duke-Elder: Factors Controlling Intra-ocular Pressure. Mr. Montague L. Hine: Report on a Case of Neurofibromatosis of the Eyelid and of an Artificial Eye which Burst in the Socket. Mr. E. Wolff: A Bend in the Sixth Cranial Nerve and its Clinical Significance (Anatomical Specimen).

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.

MONDAY, Jan. 9th.—8.30 P.M., Pathological Evening.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, London, W.

MONDAY, Jan. 9th, to SATURDAY, Jan. 14th.—ROYAL EYE HOSPITAL, St. George's Circus, S.E. Special Clinical Demonstration in Ophthalmology. Tues., at 3 P.M., by Mr. Griffith. Free to members of the medical profession.—PRINCE OF WALES'S GENERAL HOSPITAL, Tottenham, N. Post-graduate course in medicine, surgery, and the special departments. Demonstrations, lectures, ward rounds, and operations.—CHILDREN'S CLINIC, and other hospitals. Post-graduate course in diseases of children, mornings and some afternoons.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, W.

MONDAY, Jan. 9th.—10 A.M., Dr. Dowling: Skin Department. 11 A.M., Mr. Tyrrell Gray: Surgical Wards. 2 P.M., Dr. Trevor Davies: Gynæcological Department. 4.30 P.M., Dr. Carmichael Low: Dysentery (lecture).

TUESDAY.—2 P.M., Dr. Shaw: Medical Out-patients. 2 P.M., Mr. Sinclair: Surgical Out-patients.

WEDNESDAY.—10 A.M., Dr. Burnford: Medical Wards. 2.30 P.M., Mr. Donald Armour: Surgical Wards.

THURSDAY.—10 A.M., Dr. Grainger Stewart: Neurological Department. 2 P.M., Mr. MacDonald: Genito-urinary Department. 2 P.M., Mr. Bishop Harman: Eye Department.

FRIDAY.—10 A.M., Dr. Pritchard: Special Medical Treatment Clinic. 2 P.M., Mr. Vlasto: Throat, Nose and Ear Department.

SATURDAY.—10 A.M., Dr. Burnford: Bacterial Therapy. 10 A.M., Dr. Owen: Medical Diseases of Children.

Medical and Surgical Out-patients, Operations, Special Departments, daily, 10 A.M. to 5 P.M., Saturdays, 10 A.M. to 1 P.M.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.

THURSDAY, Jan. 12th.—5 P.M., Dr. J. M. H. MacLeod: Ringworm Infections.

CENTRAL LONDON THROAT, NOSE AND EAR HOSPITAL, Gray's Inn-road, W.C.

WEDNESDAY, Jan. 11th.—4 P.M., Consultations and Demonstrations of Interesting Cases.

FRIDAY.—4 P.M., Mr. A. Ryland: Demonstrations of Museum Specimens.

ROYAL NORTHERN HOSPITAL, Holloway-road, N.

TUESDAY, Jan. 10th.—3.15 P.M., Dr. W. H. McKinstry: Pathological Specimens. Dr. P. O. Ellison: Clinical Pathology.

ST. MARY'S HOSPITAL, Whitworth-street West, Manchester.

FRIDAY, Jan. 13th.—4.30 P.M., Dr. Fletcher Shaw: Antepartum Hæmorrhage.

Appointments.

COCHRANE, H. L., M.B., B.Ch. Belf., has been appointed House Surgeon, Royal Infirmary, Oldham.

NOON, C., F.R.C.S. Eng., Hon. Surgeon to the Patrick Stead Hospital, Halesworth, Suffolk.

YULE, J., M.B., Ch.B. Glasg., D.P.H., Assistant Port Medical Officer, Hull and Goole Port Sanitary Authority.

Vacancies.

For further information refer to the advertisement columns.

All Saints' Hospital for Genito-Urinary Diseases, 49–57, Vauxhall Bridge-road, S.W.—Res. Sen. H.S. At rate of £200.

Birmingham City.—Sen. Asst. M.O.H. £1100.

Central London Ophthalmic Hospital, Judd-street, W.C.—Two Out-patient Officers. Each £150. Also Jun. H.S. At rate of £50.

City of London Hospital for Diseases of the Heart, Victoria Park, E.—P. to Out-patients.

Connaught Hospital for Walthamstow, Wanstead, and Leyton, Orford-road, E.—Hon. P.

Croydon County Borough.—Asst. M.O.H., &c. £600.

Derby, Derbyshire Royal Infirmary.—Hon. Gynæcologist.

Exeter, Royal Devon and Exeter Hospital.—Sen. H.S. £200.

Freemasons' Hospital and Nursing Home, 237, Fulham-road, S.W.—Res. M.O. At rate of £250.

Glasgow, Lightburn Joint Hospital, Shettleston, near Glasgow.—Res. Med. Supt. £300.

Glasgow Royal Cancer Hospital.—Cancer Research Worker. £800.

Hospital for Consumption and Diseases of Chest, Brompton, S.W.—H.P. £50 for six months.

Hospital for Tropical Diseases, Endsleigh-gardens, W.C.—Hon. Asst. P.

Ipswich, East Suffolk and Ipswich Hospital.—Cas. O. £150.

Leeds Public Dispensary.—Jun. Res. M.O. £150.

Lincoln, The Lawn.—Med. Supt. £700.

Lowestoft, Suffolk, S. Luke's Hospital.—Jun. Asst. M.O. £500.

Manchester, Ancoats Hospital.—H.S. £100. Also Res. M.O. £150.

Manchester Royal Eye Hospital.—Two Jun. H.S.'s. Each £120.

Manchester Royal Infirmary.—Asst. M.O. £35.

Manchester, St. Mary's Hospitals.—Three H.S.'s. Each at rate of £50.

Margate, Royal Sea Bathing Hospital for Surgical Tuberculosis.—Two H.S.'s. Each at rate of £200.

Middlesex Hospital Medical School, W.—Medical Registrarship. Also Obstetric and Gynæcological Registrar. Each £300.

Midlothian, West Lothian and Peebles Counties.—M.O.H. £900.

Norwich City.—Clinical Tuberculosis Officer, &c. £750.

Nottingham Children's Hospital.—Res. H.S. At rate of £150.

Oldham County Borough.—Res. Asst. M.O.H. £450.

Portsmouth City Mental Hospital.—Second Asst. M.O. £525.

Royal Air Force, Medical Branch.—Med. Offs.

Royal Army Medical Corps.—Limited number of Commissions.

Royal London Ophthalmic Hospital, City-road, E.C.—Asst. Surg.

Royal Naval Dental Service.—Five Dental Officers.

Royal Society, Burlington House, W.—Second Foulerton Research Professor. £1400.

St. John's Hospital for Dis. of Skin, 49, Leicester-square, W.C.—Pathologist. £150.

St. Mark's Hospital for Cancer, &c., City-road, E.C.—H.S. At rate of £75.

St. Pancras Dispensary, 39, Oakley-square, W.C.—Res. M.O. £185.

Shanghai Municipal Council, Public Health Dept.—Asst. Pathologist. 600 Taels per mensem.

South London Hospital for Women, Clapham Common, S.W.—Clin. Assts.

Swindon Borough.—Asst. M.O.H. £600.

Sydney, Australia, Royal Prince Alfred Hospital.—Pathologist. £700.

Taunton and Somerset Hospital.—Sen. and Jun. House M.O.'s. At rate of £150 and £100 respectively.

Tonbridge Union Institution, Pembury, near Tunbridge Wells.—Res. Asst. M.O. £275.

Ventnor, Isle of Wight, Royal National Hospital for Consumption and Diseases of Chest.—Jun. Res. M.O. At rate of £300.

Victoria Hospital for Children, Tite-street, Chelsea, S.W.—H.P. and H.S. Each at rate of £100. Also two Out-patient Anæsthetists. 10*s.* 6*d.* per attendance.

Watford Peace Memorial Hospital.—Res. M.O. At rate of £150.

West End Hospital for Nervous Diseases, Gloucester Gate, Regent's Park, N.W.—Sen. H.P. At rate of £150.

Woolwich and District War Memorial Hospital, Shooters Hill, S.E.—H.S. and H.P. Each £125.

The Chief Inspector of Factories announces vacant appointments for Certifying Factory Surgeons at Bracknell (Berks), Dollar (Clackmannanshire), and Holyhead (Anglesey).

The Secretary of State for the Home Department gives notice of a vacancy for a Medical Referee under the Workmen's Compensation Act for the districts of the Blandford, Bridport, Dorchester, Ringwood, Lymington, Poole and Bournemouth, Wareham, Weymouth, and Wimborne Minster County Courts. Applications from practitioners living in or near Dorchester or Weymouth should reach the Private Secretary, Home Office, Whitehall, London, S.W. 1, not later than Jan. 20th.

Births, Marriages, and Deaths.

BIRTHS.

COLLYNS.—On Dec. 23rd, 1927, the wife of Dr. P. C. Collyns, Dulverton, Somerset, of a son.

JONES.—On Dec. 21st, 1927, at Old Court, Ealing, W., the wife of Dr. W. Hewitt-Jones, of a son.

DEATHS.

ALLDEN.—On Dec. 26th, 1927, at Northgate House, Beccles, John Horatio Allden, M.R.C.S., L.R.C.P., aged 75.

BASSETT-SMITH.—On Dec. 29th, 1927, Surgeon Rear-Admiral Sir Percy Bassett-Smith, K.C.B., C.M.G., of 3, Aberdeen-terrace, Blackheath, S.E.

DENNY.—On Dec. 20th, 1927, at Ashfield-place, Debenham, Dr. Arthur William Denny, aged 58.

HARRIS.—On Dec. 25th, 1927, in London, Spencer Clabon Harris, L.R.F.P.S., L.M., L.S.A., late M.O.H. Ely, aged 73.

MILLER.—On Dec. 31st, 1927, suddenly, at Craiglinnhe, Fort-william, Lieut.-Colonel Alexander Cameron Miller, M.D., F.R.S.E.

TULK.—On Dec. 30th, 1927, at Poole, Dorset, Marmaduke James Tulk, M.D., M.R.C.S., aged 74.

WARREN.—On Dec. 26th, 1927, at Weston-super-Mare, Charles Edward Henderson Warren, M.B., M.R.C.S., aged 73.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

THE DISCOVERY OF THE ANÆSTHETIC POWERS OF NITROUS OXIDE.

By GEORGE PARKER, M.D. CAMB.,
CONSULTING PHYSICIAN TO THE BRISTOL GENERAL HOSPITAL.

THE first use of anæsthetics in surgery marks such an important era in human history that even the early steps in the story of their discovery are not without interest. Nitrous oxide was the first gaseous anæsthetic in modern times to have its properties tested and demonstrated, but since some curious doubts have been expressed as to the exact place and date of these investigations, and even as to the author of them, it may be worth while to review the existing evidence.

The Evidence Reviewed.

Dr. Priestley had isolated and inhaled oxygen in 1774, probably when staying at Bowood Park, Wilts, and either in 1772 or 1775 he discovered nitrous oxide. Our knowledge of gases was greatly extended about this time by Cavendish, Lavoisier, Black, and others; and the idea that some of these new gases might have great therapeutic properties when inhaled, appealed to many minds at the time. Indeed, a strong movement sprang up to test them, especially to obtain, if possible, a cure for consumption. The history of the effort falls into two stages, the first from, say, 1790 to 1798, and the second 1799 to 1810 or later. Dr. Beddoes, a brilliant Oxford lecturer on chemistry, was an early adherent, and in 1793 he got in touch with many able men all over the country who were investigating the effects of inhaling oxygen, hydrogen, carbonic acid, and "hydrocarbonate gas." He published and annotated the reports they sent in of their results in a volume of 500 pages entitled "Considerations on the Medicinal Use and Production of Factitious Airs, by Thomas Beddoes, M.D., and James Watt, Engineer, 1794." This quickly sold out, and editions in 1795 and 1796 followed. Watt gave to the association not only a valuable paper with fine drawings on the manufacture and storage of gases (down to a gasholder for conveyance in a postchaise), but also the help of the great firm of Boulton and Watt to devise and make reliable apparatus. The importance of this at that time is shown by Watt's own famous difficulties to find a man able to make a perfect steam cylinder.

It should be noted in this early period that the researches were confined to the gases above mentioned, and no paper appeared in the "Considerations" on nitrous oxide except one by S. Latham Mitchill, an American, who taught that it was so poisonous that a single inhalation of the pure gas would destroy life at once, and that it was actually the virus of the fevers and plague—a good reason for leaving all work on it till a slack time.

It has also been suggested that ether was among the gases investigated before nitrous oxide. The only ground for this is that in two of the many reports of treatment by inhalation of oxygen, &c., Pearson and Thornton said that they found 2 drachms of ether inhaled from a saucer or teapot helpful in phthisis, asthma, or catarrh, 1795, perhaps as we use Friar's balsam. The production of ether narcosis only began after Faraday, many years later on, announced that ether when deeply inhaled produced results similar to those which had been established for nitrous oxide already.

Beddoes's Experiments on Inhalation Treatment.

Beddoes was not content with registering the results of this collective investigation by others, and began experiments himself for the campaign against consumption. He first intended to commence in London, but finally settled in Clifton, 1793, where numbers of consumptives flocked to the Hotwells. With the help of friends he formed a laboratory in Hope-square and made detailed investigations on the physiology of respiration, and the manufacture and effects of the four gases mentioned above. He showed that inhalation treatment might be safely carried out. An abstract of this work is printed in the "Considerations."

His great aim, however, was to found a public hospital where systematic treatment of disease by gases and the study of their properties might be carried out, and for some years he appealed to the public for funds. Though it was the time of the great war, he met with a generous response. The Faculty of the Edinburgh School, with Alexander Monro at their head, supported him. He had many friends, such as the Darwins, the Wedgwoods, the Edgeworths, Reynolds the philanthropist, the Rev. Samuel Parr, Astley Cooper, Lambton the Earl of Dartmouth, the Marquis of Lansdowne, Dundas and Matthew Boulton. He was able to publish a list of 200 subscribers in 1795, and the appeal went on till 1798, when he determined to commence. Watt again helped him materially by finding and recommending to him young Humphry Davy, a remarkably able chemist and scientific worker. Beddoes induced him to come to Bristol to act as superintendent of the proposed Institute, and Davy, writing to his mother from Beddoes's house in October, 1798, tells her that Beddoes had given up to him the whole of the business of the hospital and that he was planning how it should be carried on when opened. In November he writes that they are negotiating for a very suitable house in Dowry-square. This was taken, and they were soon ready to begin work on the gases already known and any others which were promising. He says elsewhere that he felt it his duty as superintendent to investigate nitrous oxide, but evidently disliked the job. John Davy, in his "Memoirs of the Life of Sir Humphry Davy," p. 45 and p. 52, adds that in the beginning of 1799 he took up his residence in a house in Dowry-square, which was provided with a laboratory, and fitted up for the purposes of the institution. "Here he began investigating the effect of gases in respiration. Of these, nitrous oxide was one of the first he experimented on. Its agency he found to be of a very novel and wonderful kind." The details of this work are given in two articles.

Details of the Experiments on Nitrous Oxide.

1. A paper by Humphry Davy, entitled "Researches chiefly concerning Nitrous Oxide," extends to 340 pages, and was published in June, 1800 in Nicholson's *Journal of Natural Philosophy*, and was reprinted in the third volume of his "Life and Works." In it he reports fully the experiments which he made personally on the production, analysis, and reactions of nitrous oxide, and some allied gases, and their effects when absorbed by plants or respired by men or animals. He aimed at finding out whether it was respirable, and, if so, what were its therapeutic powers, and whether, in the language of the Brunonian system, it was a stimulant or depressing. We have seen that Dr. Mitchill had announced that it was highly poisonous—in fact, the principle of contagion. Davy says that he had shown the fallacy of this before he came to Bristol ("Works," vol. iii., p. 269), but at first the gas could not be obtained in a state of purity and he was quite alive to the danger of any mixture with "nitrous gas." As a matter of fact he did have a nearly fatal accident with the latter, and another with "hydrocarbonate."

He tells us that early in March, 1799, he and two friends cautiously tried inhaling the impure gas well diluted with naturally unpleasant results. Early in April he obtained the gas pure by heating ammonium nitrate, and on the 11th he ventured on a single inhalation of the pure gas. As it caused no pain or spasm he proceeded to inhale it for half a minute from a silk bag on the 16th. On April 17th, in the presence of Dr. Beddoes, after closing his nostrils and exhausting the air from his lungs, he breathed from his silk bag four quarts of the pure nitrous oxide until he became practically unconscious. The excitement and pleasurable thrilling produced were the chief things noted, and as no ill-effects followed he inhaled it very frequently for some months, examining its effects on the pulse, temperature, digestion, &c., in endless ways. It could clearly be inhaled without harm, and it was not a depressant. He got many other persons to respire it, and 18 of these wrote down their sensations for him, including Coleridge, Southey, Priestley's son, and some physicians. Its exhilarating properties led to its being called "laughing gas," but very little notice was taken of its anæsthetic properties. Davy, however, on p. 276, does mention its power of stopping intense physical pain. For during an attack of severe toothache he repeatedly took it, causing the pain to disappear for the time. Dr. Rob. Kinglake, on p. 299, records that it suspended the powers of hearing, seeing, and feeling, and finally Davy writes, p. 329: "As nitrous oxide in its extensive operation appears capable of destroying physical pain, it may probably be used with advantage in surgical operations in which no great effusion of blood takes place." I cannot explain his limiting phrases, but he clearly proposes it as an anæsthetic. The date is confirmed by a letter from him on this eventful April 17th to Davies Gilbert, where he says that he had this day discovered that the nitrous phosoxide is respirable when entirely freed from nitrous gas, and he had breathed it this day for seven minutes. He adds that Dr. Mitchill's theory is, of course, entirely overturned.

It was next tried as a remedy in various diseases, which was, of course, the object of the Institute. A few cases of nervous diseases were benefited, but in consumption both it and the other gases proved complete failures. The "Researches" were published, as we have said, in June, 1800, and in a rough draft of the preface he wrote: "These

experiments have been made since April, 1799, the period when I first breathed nitrous oxide. Ten months of incessant labour were employed in making them and three months in detailing them."

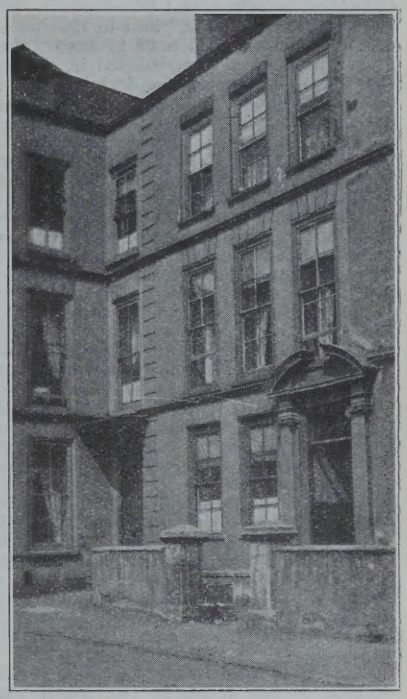
2. Dr. Beddoes's version is given in "A Notice of some Observations made at the Medical Pneumatic Institute," Longmans, May, 1799. He speaks most warmly of Davy's work, and adds that in their search for possible remedies Davy's attention was attracted to nitrous oxide, and that after making some experiments which showed that previous observers had been mistaken he (H. D.) had been led to respire it well diluted and in small quantities with depressing effects. When, however, it was obtained pure, Davy respired it freely in Beddoes's presence, and to his great astonishment showed extraordinary excitement and pleasure with no ill-results. He remarks that probably neither Priestley nor the Dutch chemists ever procured the gas so pure that it could be breathed with safety. It was easy enough to get a harmful gas, "as the author can attest from his own painful experience." He gives an abstract of the effects of inhalation by several of the healthy persons mentioned by Davy, noticing the loss of sensation by Kinglake and Morgan, and records the improvement effected in three paralytic patients. As to its use in phthisis he thinks that "the newly found gas may be regarded as a more powerful form of oxygen." On the whole he confirms Davy's claims and story up to May, 1799, and clearly thinks that no one had previously tested nitrous oxide narcosis.

For another eight months, then, Davy went on with his tests and observations before printing his "Researches," and suggesting it as an anæsthetic. In a final note to these "Researches" Beddoes adds a few observations of his own, but has nothing to say about the anæsthetic question. In detailing his own work Davy is careful to give many references to that of previous observers, and acknowledges his obligations to Beddoes. "In the conception of many experiments I have been aided by his conversation and advice," and he mentions some experiments of Beddoes, p. 197, and one suggested by him, p. 150.

Another volume of papers by Beddoes, Davy, and his fellow workers was published in 1799—viz., "Contributions to Physical and Mental Knowledge"—but nothing dealing with nitrous oxide appears in it. In January, 1801, Davy wrote from Dowry-square of the work going on at the Institute, but about that time he received the offer of an appointment at the Royal Institution in London, and left in March of that year. The Pneumatic Institute went on under Beddoes, John King, and J. E. Stock. Additional premises were taken on the Broad Quay in 1803, but the failure to obtain cures by inhalation led Beddoes to devote himself more to the teaching of preventive medicine (T. W. Jones, "Science Progress"). He died in 1808. Humphry Davy, as is well known, soon made very important discoveries in chemistry and electricity, and invented the miner's safety lamp in 1815. He rose to the highest rank among the scientists of the day, was made President of the Royal Society, and died in 1829.

Side view of the Institute, now 6 and 6A, Dowry-square.

It is an astonishing thing that after the power of nitrous oxide to destroy pain and its safety had been shown by elaborate and repeated experiments and its probable value as an anæsthetic in surgery had been pointed out by the most rising scientist of the time, practically no use was made of it for 45 years. Hickman, of Ludlow, about 1846, proved that operations on animals could be done painlessly under this gas or carbon dioxide, but no one in England or France would try it on human beings. However, the exciting effects of this "laughing gas" led to its being frequently inhaled as an amusing experiment at chemical lectures until, in 1844, Horace Wells, an American, after seeing it thus given, and noting that the person inhaling felt no pain if struck, insisted on having a tooth extracted under the gas, and forthwith employed it regularly in dentistry. Thus at last did the work of Davy and Beddoes bear fruit. If Davy had not purified it and had not popularised its use, Wells could not have introduced it into practice.



A view of 6 and 7, Dowry-square, the Institute being the corner house.

The House where the Experiments took Place.

We have now to inquire which was the house where this experimental testing of the gas took place. It is curious that doubts should have arisen and various sites been suggested. If we turn to the local directories of the time we find that the Institute and the names of the staff are given, but the house is left uncertain. In the "Bristol Directory" are these entries:—

1799 and 1800.—Hotwells Medical Pneumatic Institute. Physicians: T. Beddoes, M.D.; R. Kinglake, M.D.; P. Roget, M.D. Medical superintendent, H. Davy.

1801.—Hotwells Medical Pneumatic Institute. Physician, T. Beddoes; surgeon, J. King; medical superintendent, H. Davy.

1803.—Hotwells Medical Pneumatic Institute. Physician, T. Beddoes, M.D.; surgeon, J. King.

1805.—Medical Institution, Broad Quay and Hotwells. Physicians, T. Beddoes, J. E. Stock; surgeon, J. King.

Of the names here mentioned we may note that Peter Roget, author of "Thesaurus of English Words and Phrases," lived in Dowry-square; King, the surgeon, lived there, too, at No. 5, and Stock in Park-street, but where Kinglake resided is doubtful. However, he and Roget wrote down their experiences of inhalations, and Kinglake seems to have taken a large share in the investigations.

Stanley Hutton mentions that on March 21st, 1799, an advertisement appeared in the *Bristol Gazette and Public Advertizer* announcing the opening of the New Medical Institution. It says:—

"This institution is fixed at the upper end of Dowry-square, Hotwells, corner house. . . . It is intended, among other purposes, for treating diseases, hitherto found incurable, on a new plan. At present it is only ready for out-patients, and the

attendance of persons in consumption, asthma, dropsy, &c., which ordinary means have failed to remove, is desired. . . . Attendance will be given from 11 till 1 o'clock by Thomas Beddoes or Humphry Davy."

Joseph Cottle, the publisher, at this time a friend of Coleridge, Southey, and Wordsworth, published in 1837 his "Early Recollections," and in this he gives a long account of the Institute. On p. 29 he says "the house of the pneumatic institution was situated in Dowry-square, Hotwells; the house in the corner forming the north angle of the square." Thus Cottle and the advertisement tell us it was a corner house, and Cottle adds in the north angle. Now Dowry-square is a quadrangular area with buildings on three sides, and is part of a large open space which was probably once a common. The houses are fine specimens of early eighteenth century work built at a time when the Hotwells was a fashionable quarter—i.e., 1720 to 1750. They are practically unaltered, though now let out in tenements. On taking the bearings of the square, it turns out that one angle does practically point to the north (strictly north-north-west), and is occupied by a house with an L-shaped front. This house, now No. 6, is really the last of a row of lofty mansions forming the north-east side of the square. This house, too, runs back a long way. Its north-west side, unseen from the square, forms a façade of considerable size with nearly 20 windows facing the "Polygon" path up the hill to Clifton, and separated from it by the remains of a garden. Part of the block is now separated from the rest and is numbered 6A, but on each floor the loosely bricked-up doors and passages show the original plan of one house.

Quite recently, by the kindness of the owner, Mr. A. J. Mott, I was allowed to see the title deeds of the property which settle the question finally. In two distinct documents an abstract of title is given in almost the same words. They speak of all those two messuages, tenements, or dwelling-houses, Nos. 6 and 6A, formerly one dwelling-house standing in Dowry-square, and formerly in the occupation of Thomas Beddoes, M.D., and also the piece of ground or garden adjoining.

Thus it is quite clear that Dr. Beddoes was the tenant of this corner house in the north angle, the block now numbered 6 and 6A, formerly one house and garden. No. 6 by itself is far too small to provide rooms for experiments, a dispensary, and laboratories. It consists of two rooms and a closet on each of the five floors, and the Institute had, we know at one time 80 patients in attendance, and possibly eight or ten in-patients, according to a somewhat confused statement in Beddoes's "Notice." It was founded by an association of wealthy and influential people who wished that this experiment of the treatment of consumption and other diseases by the new gases should be carried out with every needful appliance and convenience. The combined block, with its doorways and passages now bricked up, did provide them with a compact and useful little hospital. No trace of any furnaces or stills can now be found on the premises. The garden mentioned in the "Researches" and in the deeds, though now partly built over, still opens into North Green-street or Polygon-lane.

Thus I think there can be no reasonable doubt that it was in the houses now numbered 6 and 6A, Dowry-square, that nitrous oxide was first obtained pure, and its properties were tested chemically and by inhalation, that this commenced in April, 1799, and that before June, 1800, Humphry Davy was able to recommend it as an anæsthetic in surgery after endless experiments. It appears to be the first gas to be suggested as an anæsthetic, and no one before Davy had ever ventured to experiment with and test this substance on account of its supposed deadly properties. He showed so thoroughly its harmless character and so popularised its use as an amusement that finally Horace Wells was led to employ it in dental operations in 1844. The great effort to find a cure for consumption was a failure, but indirectly it produced this and other valuable fruits.

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R. Pearson's Short Account of the Different Kinds of Airs and their Medicinal Use. 1795.

INCOME-TAX ALLOWANCES FOR REPLACING CAR.

A.D. writes: "My four year old car which cost £270 is being replaced and an allowance of £80 is made on purchasing a new car. No depreciation claims have been made during the last years on the income-tax returns. Under the Finance Act, 1926, am I entitled to an allowance equivalent to the difference between the purchase and selling prices of the old car, or to an allowance equal to the difference between the selling price of the old car and the purchase price of a new car?"

How the allowance works in practice can be best seen by taking three illustrative cases in which the new car costs the same as, more than, or less than the original car respectively:—

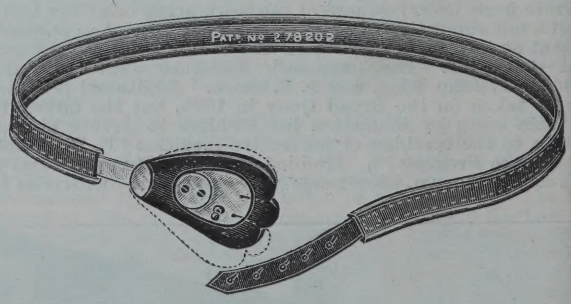
(*a*) Cost of original car £270, replaced by new car costing	£270
Allowed in part payment of new car	80
The amount to be charged against profits in the year of change is	£190
(*b*) If cost of new car is	£300
And allowance on old car is	80
The charge against profits would not be	£220
but would still be £270 less £80—i.e.	£190

The difference between £220 and £190 is a capital outlay not chargeable against profits.

(*c*) If cost of new car is	£250
And allowance on old car is	80
The charge against profits would be .. .. .. which is the expense of the renewal, there being no capital increase involved.	£170

THE DIGITRUSS.

THE accompanying illustration shows a form of truss devised by Mr. H. E. Cooper, of 162A, Adelaide-road, Brockley, London, S.E. 4, who has taken out a patent for it under the name of the "Digitruss." It has been designed to imitate the natural action of the hand and fingers when they are used to control a hernia, and the pad contains a light malleable metal plate fitted with a keyhole slot for horizontal and vertical adjustments. The plate terminates in three fingers which can be raised or depressed inde-



pendently so as to produce pressure where it is needed. The plate is separated from the patient's body by an india-rubber sponge pad, held in position by an india-rubber cover which can be slipped on and off. The pad is flat, soft, and resilient and is a satisfactory agent for applying pressure in the right place and without discomfort. It is claimed that the pad will automatically adjust itself to movements of the body in such a way that no understraps are required to keep it in position. It can be lowered or raised by loosening two screws in the locking plate.

From this description it should be evident that the Digitruss is an ingenious and convenient appliance.

ANÆSTHETICS AT THE SALPÊTRIÈRE.

IN a volume[1] recently issued from the Salpêtrière Hospital, Paris, there is a contribution from Dr. M. Boureau dealing with a series of 24,000 cases of general anæsthesia conducted by himself. The anæsthetics that he has employed were, except in some 160 cases, always either chloroform, ether, or ethyl chloride. Dr. Boureau's methods are as simple as his means, and he appears to find little use for complicated apparatus of any kind and to eschew nitrous oxide almost entirely. Nevertheless, his results, qua fatalities, have been good. He records three fatal cases of syncope, all with chloroform. His comments do not bring to light any facts or ideas which are new to anæsthetists in Great Britain except the pathetic plea that there should be a specialist in anæsthetics attached to every surgical service. This seems a quaint anachronism to issue from a great hospital.

[1] Travaux de la clinique chirurgicale et du centre anticancéreux de la Salpêtrière. By Prof. A. Gosset. Second series. Paris Masson et Cie. 1927. Pp. 272. Fr. 65.

An Address

ON THE

EDUCATION OF MEDICAL OFFICERS FOR SERVICE IN THE TROPICS.

Delivered at the International Continuation Course of the League of Nations, Nov. 24th, 1927,

BY ANDREW BALFOUR, C.B., C.M.G., M.D. EDIN., F.R.C.P. LOND. & EDIN.,

DIRECTOR, LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE.

PART I.*—TROPICAL MEDICINE.

THERE has recently been published a lecture by an old-time and retired medical officer in a certain British Colony, a lecture which has been acclaimed by a local newspaper as a monument of wisdom. Its leading article commented with special approval on his statement that training medical officers in tropical medicine in this country was a mere waste of time and money. It referred to a two weeks' course, which happily nowhere exists, and showed itself profoundly ignorant on this as on other points, but it is sad to find a medical man with a record of long service in the tropics expressing an opinion so contrary to the teachings and practice of the great Sir Patrick Manson. True he need not be taken seriously, while no doubt there is truth in his contention that the best place to study tropical medicine, at least on the clinical side, is the ward of a good tropical hospital.

Let us, however, consider his futile argument a little in detail. His idea is that it is far better for a medical student after graduation to hold a resident hospital appointment in this country and then to proceed to the tropics, soundly grounded in general medicine and surgery, than for the same graduate to pass directly from his medical school to a school of tropical medicine from which he will fare foreign. No one will deny that, if it can be managed, the newly fledged medico should gain experience either in hospital or in private or dispensary practice before he takes up the study of tropical diseases, but it is well to remember the motto engraved on the clock face of the quadrangle of the medical buildings at the University of Edinburgh—*Ars longa, vita brevis.* Nowadays, after a six years' medical curriculum, a man is anxious to enter as soon as possible upon his life's work and to earn his livelihood, and very often he cannot afford the time necessary to gain what is undoubtedly much-needed experience.

But even supposing the desideratum of our reactionary colonial medical officer is fulfilled, what happens? His medical man, well equipped in ordinary essentials but blissfully ignorant of parasitology and of the symptomatology of tropical maladies—for these subjects are at the best inadequately dealt with in the crowded medical curriculum—proceeds abroad and promptly finds himself in a quandary. He encounters a case of malaria and, having heard something about ague, looks, but looks in vain, for a typical temperature curve and a hot-and-cold stage. Unable to make a proper blood examination, or at least to detect the malaria parasite in the blood, he begins, if he is wise, to doubt his diagnostic powers. If unwise he carries on, and it is at least possible that his patient also carries on to another world, proceeding from the ward feet first to the appointed cemetery.

I have chosen malaria as it is perhaps the most protean of all diseases and may simulate almost any complaint, but conversely other diseases may mimic malaria. Let us suppose that the medical officer encounters a case with rigors and a muddy complexion, a continued temperature, an irritable temper, night sweats, insomnia, and a pain in his right shoulder. There is an old history of malaria and there is nothing very definite about the symptoms. Ten to one he says to himself, "chronic malaria," and exhibits quinine. The patient does not improve. On the contrary, he gets worse, and then one day the doctor finds an ominous fullness in the right hypochondrium and realises, possibly too late, the real nature of the case. He has never before seen an example of hepatic abscess and does not know that it may follow a dysenteric infection so slight that it has been forgotten or perhaps has even passed unnoticed. He is not on the *qui vive* as he should be, he has not thought of amœbic hepatitis and its grave sequela, and, like many another physician, he has been caught napping. He and his patient are fortunate if recourse to emetine at this stage effects a cure. In all probability an operation will be necessary and the patient may swim for his life, as the saying goes.

I might multiply examples, but it is scarcely necessary, for happily there are few nowadays who share the amazing view of the gentleman I have cited. All those with a knowledge of the subject and a sane outlook on life will admit that, not only as regards liver abscess but in a host of other tropical maladies, forewarned is forearmed, and will agree that, with the facilities now existing, it is little short of criminal to send a medical man to practise in the tropics who has not received an adequate training in tropical pathology and parasitology combined with clinical instruction in the so-called diseases of hot climates.

While there can be no dubiety on this score, the best method of securing such adequate training remains a question for very careful consideration. It is true that here in London we believe that the course given by the School of Hygiene and Tropical Medicine meets most requirements very fairly well, and we are encouraged in that belief by the opinions expressed by some of our students now resident abroad and who are in a position to make an authoritative statement on the subject. At the same time, we are far from claiming that our curriculum approaches perfection. We recognise that it does not suit all needs and that it may, before very long, require modification. This is not surprising if we consider those for whom we have to cater. Presumably these do not greatly differ from the classes of students who attend any school of tropical medicine, though here perhaps we have a greater variety.

TYPES OF STUDENTS.

First and foremost there are the medical officers of the Colonial Medical Service, either men or women going abroad for the first time to take up appointments or medical officers who have served in the Colonies or Protectorates and who, for some reason or other, have not been through a course in tropical medicine. There are also those who think it well to take a refresher course when home on leave. Again, there are medical missionaries, some proceeding for the first time to the mission field, others back from it and anxious to be up to date. There are officers of the Indian Medical Service with very considerable practical experience in clinical work, but perhaps a trifle rusty in laboratory technique and not well versed in recent developments. There are medical officers of business companies, most of whom have usually served in the tropics, on plantations or elsewhere. There are medical officers of railways, occasionally there is the ship's surgeon, though he is not nearly so common as he should be, there is the laboratory and research worker anxious to brush up his knowledge or, it may be, acquiring for the first time an extended acquaintance with tropical pathology, entomology, helminthology, and protozoology. Not infrequently there is—to his credit be it spoken—the private practitioner in the tropics who, recognising his deficiencies, seeks to remedy them at his own charge, and, more rarely, the man going out to practise in the tropics who has the sense to appreciate the fact that he is about to be plunged into a new world

* Part II. will appear in a coming issue.

when he gets there and that, both for his own sake and that of his patients, it were well to get a grasp, and a scientific grasp, of certain fundamentals. Lastly we have the man who attends the course because he is interested in the subject and is a seeker after knowledge or because he thinks that some day or other he might like to go abroad and, finding that he has time at his disposal and the necessary funds, takes the opportunity of becoming familiar with one of the most fascinating branches of medical study and incidentally with those ancillary sciences on which tropical medicine is securely based.

You will admit we have plenty of variety here and yet, in the main, we need only consider two groups, those who have had practical experience of the tropics and those to whom the torrid zone is merely a name.

There can be no doubt that it is undesirable to unite these two groups into a single class, although it is true that some men may have learned little from their residence in the tropics, and it is also true that, while a man from the tropics may have good clinical experience, he may find himself at a disadvantage as compared with a student who has just completed his medical curriculum, whose laboratory knowledge is still fairly fresh, and who can also take more kindly to the rigours of a course of study and of its concomitant examinations.

A Short Course of Study.

Still, all things considered, it seems to me that the ideal thing (it is not, of course, always possible to attain the ideal), is to have a short course for those who have never been in the tropics, a course during which essentials can be hammered into them though, mark you, not a mere cram course, for that is fatal. It must be conducted on proper scientific lines and given that academic status which, I venture to think, is the basis of all sound medical training. At the same time it should concentrate on certain cardinal facts which the student simply must know. For example, after some preliminary training in microscopical technique, including instruction in the use of the dark field method, a point of considerable importance, he must be taught afresh how to examine the blood, both fresh and stained, how to recognise normal and abnormal cells, how to do blood counts, how to estimate hæmoglobin, how to avoid fallacies, and how to solve hæmatological puzzles. Blood changes met with in tropical pathology must be expounded to him and then, and not till then, he can turn his attention to malaria from the laboratory standpoint. It is strange how difficult it is to make the average student a competent malariologist in this respect. It is necessary to repeat the lesson again and again, both with the ordinary film and the thick film, but it is essential that he should obtain a thorough grasp of the subject and be in a position to say when what may be a parasite comes into his field of vision, "I am doubtful; therefore it is not malaria." When he reaches that stage there is hope for him.

I do not think, however desirable it may be, that it greatly matters whether or not he can in every case readily distinguish the species of parasite, save that he must, of course, know what a crescent portends, so long as he can recognise the plasmodium whether it be a small ring form, or a half-grown schizont, or a rosette, or a gametocyte. Such recognition must naturally be based on a clear conception of the protozoa, so while he is busy at malaria he must be familiarised with what we may call the elements of protozoology. There must also be a correlation of the blood findings with the clinical aspects of malaria so that, whether or not he can differentiate a quartan from a benign tertian or a malignant parasite, he must know what types of fever the different parasitic infections produce. He must also be thoroughly versed in the pathological anatomy of malaria and understand why and how acute malaria kills and why and how chronic malaria produces cachexia. It is also essential that he understands the relationship of blackwater fever to malaria and realises the blood changes in this condition.

Training in Malaria.

The more I see of training in tropical medicine, the more I delve into the literature, the more am I convinced that a sound knowledge of malaria is half the battle. This is not surprising when one remembers that malaria still remains the most common malady of hot climates and reflects that every year it slays some two million victims.

During his laboratory course on malaria the student should be given that clinical instruction which is all-important. He should see cases, he should take cases, he should, if at all possible, take the blood of cases and, whenever there is an opportunity, attend autopsies. It is far better to teach malaria from a patient than from the lecturer's desk, though, of course, theoretical instruction is required, and such instruction should be fully supplemented by class diagrams and museum specimens. One need not enter into the details of the clinical teaching, but perhaps mention should be made of the necessity of warning the student, as did Sir Patrick Manson, that every patient coming from the tropics with fever is not suffering from malaria, that indeed he very often is not a tropical case at all, and of impressing upon him, not only the protean character of malaria, but the fact that it often exists with, and may mask or be masked by, some other disease. If he gets these truths into his head something will have been accomplished, and if he also is made to realise that in the treatment of malignant malaria "time is of the essence of the contract," in other words, that the sooner the patient gets his quinine the better, then it is probable that some day or other a life will be saved which might otherwise have been lost. I would like to record my opinion that not only should there be clinics in the classroom but that the students should visit the wards. It is important that they should see cases seriously ill from malaria, and it is rarely that such patients can be brought to a classroom. Valuable lessons are furnished by malaria cases shivering and with chattering teeth in the cold stage, flushed and restless in the hot stage, or sweating profusely as the temperature falls. Nowadays, in this country coma will rarely be in evidence but, once seen, malaria coma is not easily forgotten. Those of us who accompanied Manson in his ward visits will recall how valuable were the lessons he taught on cases which could not be exhibited in a lecture theatre.

The instruction will naturally comprise an account of the method of infection, and a short introduction to entomology may be followed by a study of mosquitoes and more especially of the anophelines. For the class of student I have in mind I do not think it is necessary to go very deeply into the subject. I do not believe that the practice of mosquito dissection is essential. What is required is that the student should be able to recognise an adult anopheline, should know the habits of this family of mosquitoes, should be able to recognise anopheline eggs and larvæ, should understand the relationship of the female anopheles to malaria transmission, and should be familiar with those species which have been proved capable of acting as vectors of the malaria parasite. An outline of antimosquito measures to be supplemented during a course in tropical hygiene should also form part of the entomological instruction.

Scheme of Instruction.

It will be seen that, after some preliminary and general instruction, the idea is to take an important disease and to group round it, as it were, the teaching which is required for its full elucidation, considering it, therefore, from the purely clinical side, from the laboratory standpoint, and dealing with its relations to those sciences, hæmatology, protozoology, and entomology, with which it has close connexions.

It seems to me that this is the way to handle a short course of this kind, and there should be no difficulty in following out the notion in the case of all the big

protozoal diseases such as sleeping sickness, leishmaniasis, and, of very great importance, amœbic dysentery. In the same way when we come to the helminthic disorders, substitute helminthology for protozoology, bring in such entomology as is required as, for example, the rôle of the culicines, the simuliidæ, and the culicoides in filariasis, together with other necessary zoological information; snail hosts in schistosomiasis, fish in clonorchiasis, and so forth.

I am inclined to think that a couple of capable teachers, one on the clinical side, one on the laboratory side (and the latter, I admit, will not be easily found), with, of course, assistants and demonstrators, would be sufficient to ground the students properly, keeping, as I say, to essentials but not losing sight of the larger issues and forecasting, as it were, the longer and fuller course to which it is hoped the student will return after a sojourn in the tropics.

I think it likely that the idea will be anathema to some. A helminthologist will say, "I alone can teach helminthology properly," a protozoologist will emit a similar declaration regarding his subject, and an entomologist will probably voice a similar view respecting entomology. Yet for the specific purpose under consideration I doubt if this is true, although I admit there is something in another argument I have heard voiced—namely, that students with little or no knowledge of a subject are best taught by the professor himself while his assistants can, with advantage, take more advanced classes. However, this is scarcely the place to consider ways and means. The nature and scope of the course of study is what concerns us.

As I have said, the laboratory work, be it pathological or bacteriological, can be linked up with the diseases studied but, in addition, there must be some general instruction in methods and principles, for our experience shows that the majority of men coming direct from medical schools have either been inadequately trained in these subjects or have forgotten much that they have learned.

It would, I think, be hopeless to try to give detailed instruction in special subjects like tropical ophthalmology and dermatology, but a certain number of important eye and skin conditions should be selected and the lessons they convey clinically and from the bacteriological, mycological, protozoological, helminthological, and entomological aspects should be impressed upon the student. Naturally, the surgery of the tropics cannot be excluded. If the student knows nothing else he should know a good deal about tropical ulcers and how to treat them, while the surgery of liver abscess, of filariasis, and of vesical calculus should be taught him as far as it can be taught outside the tropic belt. Following this concentrated pabulum, which should be supplied along with ample wall diagrams and museum specimens, including models, which are most helpful, there should come a short course in tropical hygiene, somewhat on the lines of that which I hope to lay before you in my second lecture but lacking those sections which meet especially the needs of the medical officer of health as, for instance, public health administration and organisation and port health work. How much time should be devoted to this intensive training? I believe it could be got into three months without imposing undue hardship on teachers or students, and I very much doubt if anything shorter would serve the purpose, for there must be intervals, tutorial weeks we call them in our full course here, where the student gets a breather, has time to think, to ask questions, to consult the literature, to study in the museum. Otherwise, what Herbert Spencer said in his "Study of Sociology" will assuredly apply to him: "When a man's knowledge is not in order, the more of it he has, the greater will be his confusion."

I take it there would have to be an examination as it is unhappily the only method we at present possess of testing a man's knowledge, but I would be inclined to make it as practical as possible—laboratory work and viva voce. If there was any written part I would see that it took the form of an essay designed to make the student think for himself and more a continuance of the course of teaching than an instrument of torture.

Full Course of Study.

Passing now to the consideration of a training designed on a more liberal scale for those who, as the saying is, have "lived under the palm trees," I think I cannot do better in the first instance than outline the course of study at present pursued at the London School of Hygiene and Tropical Medicine.† This course covers 20 weeks, including the two class examinations, and one of its features is the presence of those tutorial weeks of which mention has already been made. A very considerable time is devoted to pathology and bacteriology. This includes instruction in the use of the microscope and its accessories, the study of the blood, both normal and abnormal, and, amongst other things, the dissection of mosquitoes. I think it should also include the dissection of ticks, or perhaps I should say their examination for spirochætes.

Entomology, protozoology, and helminthology receive due attention, both in the laboratory and classroom. Reference to the school prospectus will show the comparatively large amount of time devoted to clinical demonstrations which are conducted throughout the tutorial weeks and it will be noted that eight hours are occupied by lectures designed to give the student some account of recent advances in tropical medicine. This time, if desired, can to some extent be utilised for a revision prior to examination. A certain amount of biochemistry is included and a few lectures deal with the subject of poisonous plants in the tropics. Visiting lecturers deal with various subjects, amongst them epidemiology, dermatology, ophthalmology, mycology, the surgery of the tropics, and dental surgery from the standpoint of medical men far removed from dental help. Tropical hygiene will be considered separately, together with port and ship hygiene, in my second lecture.

Here, then, we have a curriculum covering a wide field and designed to give the student a fairly comprehensive view of medicine in the tropics. It also should, and I think does, indicate lines of further study. If time could only be found for it I believe a most useful lecture would be one on the literature of the subject dealing with books and journals, although it is true that any student with an inquiring mind and a discerning eye will soon discover from the invaluable *Tropical Diseases Bulletin* on which pages it were best to browse.

It would be wearisome and probably unprofitable to consider details of the teaching under the various headings I have mentioned, but there are a few points which, I think, may be touched upon with advantage.

Some Details of the Curriculum.

Let us take the clinical work first of all. In addition to the lectures on various maladies it is, I am persuaded, of the utmost value to have a discourse on the diagnosis of fevers in the tropics—in other words, an account of a survey which, somewhat in the fashion of a synoptic table, will, by a process of exclusion, eventually enable the physician to come to a correct conclusion so far, of course, as the vagaries of disease and the limitations of clinical and laboratory tests permit of finality being reached. The kind of thing I mean may be found in the "Memoranda on Medical Diseases" published by the War Office, and entitled "Fevers in the East." It is founded on a paper by Colonel D. W. Sutherland, of the Indian Medical Service, which proved most useful to many workers both at the bedside and in the laboratory, and to which students should be referred, being given, of

† A diagram setting out the curriculum is given in the published prospectus and calendar of the Division of Tropical Medicine and Hygiene. The graph shows at a glance the arrangement of the curriculum, including the tutorial weeks, and indicates the allotment of times to the various subjects in which instruction is given.

course, at the same time such new information as may have accumulated. I have already mentioned the usefulness of models. Those supplementing the clinical lectures are specially valuable, and an effort should be made to secure representations of tropical maladies in coloured races as, for example, the excellent series of the Amsterdam School.

Intravenous therapy is nowadays so important in tropical practice that the student should be carefully instructed in the technique. I should think it might be possible to have a model of an arm constructed on which he could practise though, so far as I know, such a desideratum has not yet been evolved. I am inclined to think that one lecture and demonstration on the chemotherapy of tropical diseases would serve a useful purpose, the subject being dealt with on broad lines. There is the question of the care of drugs in the tropics, their deterioration, certain peculiarities of action under tropical conditions as, for instance, the severe effects sometimes produced by ordinary doses of castor oil, the mode of action of some of the newer remedies (why is emetine efficacious in two such widely different conditions as amœbic dysentery and schistosomiasis ?), antidotes in what we may call therapeutic poisoning (sodium thiosulphate as a remedy for poisoning by some of the heavy metals), and so forth. A few words also on protein therapy would not be out of place.

In the case of surgery an account of the care and maintenance of surgical equipment, both in the dry and the moist tropics, would certainly appear to be indicated. A man who does not know how to look after rubber utensils is likely to be mulcted heavily in his pocket before he gains the necessary experience.

Some instruction in dental surgery is obviously desirable, considering how often medical men in the tropics are called upon to do dental work.

Here we pay particular attention to dermatology and ophthalmology, and rightly so, for skin diseases and diseases of the eye bulk very largely in tropical practice. They must be taught by specialists in these subjects, and their study well repays the time devoted to them.

The medical officer in the tropics is so often called upon to combine the duties of doctor and nurse that it might be well to give him a few hints on the nursing of certain diseases under tropical conditions. At any rate, he should be referred to the section on this question in Byam and Archibald's "Practice of Medicine in the Tropics."

There is not, perhaps, much to be said about those subjects which are chiefly taught in the laboratory.

The Laboratory Subjects.

Hæmatology has already been mentioned, but I would like here to insist on the necessity of making the student thoroughly familiar with both the healthy and the infected fresh blood film. Occasions will arise, perhaps not infrequently, when the medical officer will have to diagnose a case of fever and yet have no facilities for staining a blood film. Now I know from sad experience that nothing is more difficult than to diagnose accurately the conditions you see in the fresh blood. There are Maragliano bodies which would deceive the very elect, there are not infrequently appearances simulating malaria pigment while, without considerable experience, it takes a courageous and honest man to lay his hand on his heart and say, "This is undoubtedly a small ring form of the malaria parasite." The student should always examine the same blood fresh and stained, and indeed it is not a bad thing, when the scrutiny of the fresh blood is completed, to make a dry film of it, stain it, and examine it. The result is sometimes surprising and an excellent corrective to any tendency towards complacency with one's status as a hæmatologist and parasitologist.

The advanced student may with advantage practise vital staining of the blood. It is of special service in the absence of a dark field when searching for spirochætes.

The pathology of the various diseases will be taught along the usual lines, but I may say that, in a course of this kind where, as a rule, men have for some time been divorced from histological studies, it is very advisable to give them an opportunity of comparing the normal with the abnormal. In the study of malarial tissues this is specially desirable, for pigment is often a difficulty. It is not always an easy matter to distinguish true malarial pigment from other pigments, some of which may have no pathological significance.

Further, I believe that a most interesting and useful dissertation could be framed on fallacies and puzzles in tropical histopathology, nearly if not quite as informative as a similar discourse on blood examination. To cite one case only, it is very necessary that, in Levaditi sections, appearances closely simulating spirochætes should not be mistaken for these parasites.

Where bacteriology is concerned important questions of technique arise. The student must know how to surmount some of the difficulties which face the laboratory worker in the tropics, difficulties due to heat, to dust, to the abundance of aerial moulds, to the deterioration of glassware, and to various other causes which it would take too long to list but which, if he is not warned about them, will assuredly cause him considerable vexation and loss of time.

The importance of mycological infections in the tropics must not be overlooked and, though it may be impossible, as well as unnecessary, to produce mycologists, students should be familiar with the technique for demonstrating fungi, whether in a skin lesion or in a general tissue infection like mycetoma. A few systematic lectures on the tropical mycoses constitute a separate item in the course at this school.

I feel a little diffidence in attempting to say something about entomology, helminthology, and protozoology for, though I am to a certain extent familiar with all three subjects, I have had very little experience in teaching them and they are highly specialised. It is, however, clear that in each case it is necessary to give some general instruction and also, I think, to deal with nomenclature. An explanation of the terms used and of their derivation cannot fail to be helpful. It fixes the meaning in the student's mind and prevents the acquisition of that "parrot" knowledge which is so common and so distressing. In most instances the correct understanding of a scientific term throws light on the reason for its use and is a real aid in classification. Sometimes it is specially illuminating, as in the case of the word "anopheles," even though originally the term may have been employed in a sense different from that which it can now be made to serve.

When it can be arranged, it is well to give practical instruction first of all upon some typical form which will emphasise the character of a group or family. Thus in entomology a study of the cockroach, not in itself a specially harmful creature, but a typical insect of convenient size, serves the purpose. In protozoology the amœba provides a useful preliminary lesson while, if in helminthology no single worm may serve the purpose, yet the Ascaris of the horse may be taken as a type of the Phylum, Nemathelmia, and some large fluke or cestode will afford material for demonstrating the characters of the Phylum, Platyhelmia.

I need say nothing about the detailed teaching of the three subjects save that it should be as practical as possible and must perforce be largely limited to a consideration of insects, worms, and protozoa of real importance in tropical pathology and that, in the case of entomology, it is desirable to direct attention to insects which are destructive to stores, food, and equipment.

Ophidiology, the scientific study of snakes, must have a place in the course but need not be extensively pursued while, in addition to the venomous snakes, some attention should be directed to other noxious animals such as poisonous spiders and centipedes. It is also advantageous for the student to know something about poisonous fish, both those which

inflict poisoned wounds and those which cannot be eaten with impunity.

This leads me to say a word or two about poisonous plants. There can be no doubt that this subject should not be neglected. A few lectures upon those, the ill-effects of which are most commonly encountered in the tropics, will suffice and should be supplemented by the exhibition of specimens either dried or preserved in formalin or spirit.

Epidemiology and Biochemistry.

We include a little epidemiology in the course on tropical medicine, though perhaps it should properly be regarded as part of the hygiene course. It is not easy to teach such a large and complicated subject when time is limited, but I think it should not be altogether ignored. Useful lessons can be taught from a consideration of the geographical distribution of tropical diseases. Thus the fact that kala-azar is unknown in Mauritius and the West Indies may be employed to show how certain diseases are limited to certain places owing to the presence of a specific intermediate host in such localities; thus the existence of at least two varieties of typhus fever in the tropics and subtropics, the one louse-borne, the other of undetermined ætiology, will indicate the necessity for further research in this direction; thus the absence of malaria in certain districts where apparently it should be present will indicate limitations in our present knowledge. Again there is the influence of climatic conditions in such diseases as cholera and small-pox. Yet again the disappearance of yellow fever from certain West Indian islands where no preventive measures have been taken will raise questions of immunity and suggest a solution along the lines of epidemiological inquiry instituted by Topley and Greenwood in the case of mice colonies. I might easily multiply examples but these must serve.

Lastly, there is biochemistry. If, as has been said, "the future is to the biochemist," then certainly the biochemical aspect of tropical medicine cannot be disregarded. Its significance in the deficiency diseases, scurvy, beri-beri, and pellagra must be emphasised. In some parts of the tropics diabetes mellitus is a most important malady and in others nephritis is responsible for much morbidity and mortality. These pathological states can only be properly understood if their biochemical relations are fully appreciated.

Jaundice, as encountered in yellow fever, malaria, and many other conditions, cannot be explained save on a biochemical basis. There are certain tests with which the student ought to be familiar. Some of the more simple he should himself be able to apply if he is to play the part of a scientific physician and diagnose and treat his cases on satisfactory lines. It is not perhaps necessary that he should undergo a laboratory training in such tests, but they can be demonstrated to him and their significance explained, while he can be told where best to look for further information.

Length of Course and Examinations.

I have outlined briefly and imperfectly the kind of curriculum which I believe will benefit the serious student of tropical medicine. It cannot be compressed into less than 19 weeks of arduous study, and it were well if a somewhat longer time could be devoted to it, especially if it is intended to be a diploma course. I take it that, to justify their existence, examinations should be regarded as an integral part of scientific training. Hence I touch upon them here. We have two school examinations, the first on entomology, helminthology, and protozoology, the second concerned with some or all of the other subjects of the curriculum. The first consists of a written and a practical test, the second comprises the answering of set papers, practical work, and oral examination. It ought also to comprise a clinical in the wards or on patients but, owing to the fact that it is followed by a diploma examination and that the amount of clinical material is limited, this has at present most unfortunately to be omitted. The examiners do their best with models, illustrations, and museum specimens, but I admit that here is a hiatus which should, and I hope soon will, disappear. The standard has recently been raised but, even so, we find that only a few students fail and some of them doubtless benefit from the ordeal quite apart from obtaining a certificate of proficiency. I recall one very useful lesson which a diploma examination inculcated. Blood films containing *Acanthocheilonema perstans* were set for microscopical examination. A great many students never thought of making a scrutiny with the low power when they would almost certainly have recognised the infection. They were content to examine with the ordinary high power or the oil immersion. Naturally enough perhaps they failed to come across filariæ, for the number of embryos per film was limited. Had they been content to state that they could find nothing pathological or perhaps to hint at an eosinophilia, no great harm would have been done, but alas, finding nothing, they let their imaginations run riot and some discovered malaria parasites and some trypanosomes, a most serious state of affairs which necessitated the rejection of a considerable number of candidates. Rightly so, for in the tropics such conclusions might easily lead to very serious results. Imagine the Governor of an African colony sent home suffering from an imaginary, incipient sleeping sickness!

Two other points about the course, and I have done. It is, I think, very advisable to take advantage of the presence of any distinguished authority and get him to address the class. This breaks the routine, interests the students in a personality, and gives them an opportunity of hearing a subject discussed, possibly from a particular point of view, by someone who has shed light upon it.

Lastly, the cinematograph film can be used with good effect and so, in the museum, can the graphic and orderly method of exhibit to which tropical medicine lends itself so admirably. Such, then, are the principles and methods of training which seem to me well calculated to fit the medical officer for work in the tropics and which should stand him in good stead even when, far from help, he has to rely upon himself and upon the knowledge he has gained during his period of study. Yet let it be remembered that, even if the method be sound, much depends on the spirit infused into the teaching and on the ideal set before the student. Mere cramming is, as I have said, fatal. There must be an honest attempt at scientific grounding, an effort to interest as well as to instruct, a desire to impart that wider view and loftier aim which is perhaps best expressed in the words of the poet, George Herbert:

> "Who aimeth at the sky
> Shoots higher far than he who means a tree"

The Future
OF
MEDICAL PRACTICE IN ENGLAND.

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I THINK it will be generally admitted that no profession has seen greater changes during the last half century than our own. During this period the science of medicine has rapidly advanced, and changes in the organisation of the profession have naturally followed. The general practitioner of the past was not only physician, surgeon, apothecary, and accoucher, but also sanitary and public health adviser as well.

But during the last 50 years, at a rapidly increasing rate, one branch of medicine after another has been partially or completely withdrawn from the ken of the general practitioner. Sanitation and public health

are now dealt with exclusively by the medical officer of health; indeed, so little is the average practitioner concerned with preventive medicine that he is almost liable to forget the existence of this most important branch of his science. The diagnosis of notifiable infectious disease is still the business of the general practitioner, but directly removal to the isolation hospital is decided upon, he sees and hears no more of his patient. In some degree the same is true of tuberculosis, excepting that even the diagnosis of this disease takes place to an ever-increasing extent in the tuberculosis dispensaries. Both the diagnosis and treatment of venereal disease are now largely carried out at clinics especially instituted for this purpose, and I have been told by practitioners that they now rarely see a case of venereal disease in its early stages, although, of course, syphilis in its tertiary form is still cropping up fairly frequently. School clinics are now treating a good many of the chronic affections of childhood, previously dealt with by the practitioner or hospital or not at all, and the maternity and child welfare centres, although not originally intended for the treatment of diseased conditions, do in actual practice give treatment to many cases that would otherwise come to the general practitioner. In some districts a very large percentage of children are born within the walls of the municipal maternity hospital. "There are no fewer than 17 departments, spheres, or directions of clinical activity for which provision is made in this sectional way under the auspices of local authorities. Some of these cover an extensive field of medicine."[1] The treatment of the more serious mental diseases has been lost to the practitioner for many years, but few will, I think, regret this loss.

The appalling housing conditions, not only in towns but in many country districts as well, and the increasing complexity of modern methods, make the need for institutional treatment of the sick much greater than previously. Hospital beds are therefore rarely empty, and the poor-law infirmaries are taking more acute and subacute cases, while not a few of them have become staffed and equipped like the large general hospitals. But in very few hospitals or infirmaries does the practitioner retain any contact with his patient when once he has passed within their doors, nor is his doctor informed of the diagnosis made or treatment received when he passes out again.

A Continuing Process.

In these and other ways, then, during the last 40 or 50 years, the scope of the general practitioner has been continually narrowed and confined by public or semi-public provision for the treatment of an increasing number of diseases without his aid. Now this process is bound to continue for two reasons: first, because it is part of the spirit of the age to provide for its needs by collective action; and secondly, because, in spite of some defects with which I will deal later, the public provision for sickness already instituted has undoubtedly made for the general good.

Thirty-five years ago 1 person in 7 died of tuberculosis in England and Wales; to-day only 1 in 14 so dies. During the last 20 years (1905–1925) the infantile mortality-rate has fallen from 128 to 75 for 1000 births. Few people will deny that the public provision made has had a good deal to do with these beneficial results. In connexion with venereal disease the effects of State interference have been even more striking. Between 1920 and 1926 the number of new cases reporting at the clinics fell from 42,805 to 22,550 in the case of syphilis, and from 40,284 to 35,052 in the case of gonorrhœa. These, like many other figures, may possibly be misleading, but no one in active practice can, I think, doubt that syphilis is decreasing. But perhaps the best results of all are to be seen in connexion with the treatment of school-children. To take one disease only, Sir George Newman, as Chief Medical Officer of the Board of Education, in his annual report of 1923, tells us that, as the result of preventive and curative treatment, the percentage of children found on routine inspection in London with defective hearing has, during the last ten years been halved, and that in Cambridge and Exeter the results have been even more striking.

As I said before, I maintain that this process of robbing the general practitioner of clinical material is bound to continue and increase. The hospitals are constantly appealing for further extension of bed capacity, and not only do their long and increasing waiting lists support this appeal, but the Voluntary Hospitals Commission recently recommended that another two million pounds of public money should be given to the voluntary hospitals to equip more beds. The improved facilities for treatment in many poor-law infirmaries are enabling them to take many more acute cases which were previously treated at home, and now the Ministry of Health is inviting representatives of the poor-law and general hospitals to come together to discuss, among other things, whether the medical and surgical staffs of the hospitals cannot undertake the charge of cases in the poor-law infirmaries. This is undoubtedly all to the good from some points of view, but it will, nevertheless, tend to rob the general practitioner of a considerable amount of important and interesting clinical material. And now demands are being made for still further provision for certain classes of persons and certain types of disease. A very strong case can be made for the provision of similar inspection and treatment for the *pre-school* child to that accorded to the child of school age. It is truly pointed out that when children arrive at school for the first time the mischief is often already done and cannot be undone, and their efficiency for the rest of their life is impaired in consequence, and legislation cannot be long delayed in connexion with these young children. On the other hand, an equally strong case can be made for the adolescents between 14 and 16, for whom no public medical provision now exists. These children are, as a rule, earning little, and cannot pay for medical attention privately, and thus the good work done in the schools may readily be made of no account. The maternal mortality at childbirth, amounting to nearly 3000 annually, which has not markedly changed for some 25 years, is causing much public anxiety. What amelioratory measures will ultimately be adopted is not yet clear, but it seems not improbable that the public may demand a vast increase in maternity homes to be staffed exclusively by practitioners of special experience. There is also a demand in some quarters for a national campaign against cancer. Public cancer clinics have been fairly successful abroad, and may at any time be introduced into this country. There is a strong feeling also in some quarters that efficient treatment should be provided for orthopædic cases and for heart disease in children. Further public provision for the prevention and treatment of disease is inevitable, and if carried out in the same way in the future as in the past, is bound to still further rob the general practitioner of much of the variety and interest of his work.

Incoördination of Public Institutions.

Our public provision for the sick may be looked upon as a series of watertight compartments having no communication with each other. If the right sort of person with the right sort of disease happens to fall into the right compartment the treatment obtained is generally good, but there is little to guide him into the right compartment, and nothing to do for him if he happens to fall into the wrong. A good example of the complete lack of coördination between the different schemes for provision for the sick came before my notice recently. Eighty-three of the patients in a large county sanatorium for tuberculosis are children. Of these only three showed definite signs and symptoms of tuberculosis after careful observation lasting over many weeks. Most of the others were classified as "indefinite for observation." But 58 per cent. of these children were found to be suffering

[1] Leading article in Brit. Med. Jour., June 11th, 1927.

from septic tonsils and adenoids. Unfortunately, however, in all but one case all attempts to get these tonsils and adenoids removed have so far failed. "Tuberculosis" these children have been diagnosed, and tuberculosis they must remain for the rest of the chapter, and so they will have to stay at the sanatorium for anything up to 18 months at the cost of the ratepayers.

When the Ministry of Health was created, it was hoped that it would serve to coördinate all the various services dealing with public health. Unfortunately, however, we have had, so far, but one Minister of Health (the first) who could be expected to have any knowledge or experience in health matters, the other Ministers of Health being clearly appointed for their skill in getting houses built or preventing their being built, according to the desire at the moment of the Government in power. Moreover, at best the Ministry of Health can only act as a coördinating agency at the centre, and what is needed is coördination at the periphery as well, and no one can do this effectually but the general practitioner. It seems to me that without him increasing incoördination is bound to occur, as more and more of his patients are taken from him and brought under the care of the State. I look upon the general practitioner as an essential part of the equipment of every family, whether rich or poor, not only to serve as guide, philosopher, and friend, but as registrar of events of medical importance as well. Now if the practitioner is excluded from, and knows nothing of, some of the most important phases in the medical history of his patients, it will be impossible for him to take his part as he should, and I have no doubt that the absence of the natural liaison officer is the main cause of the imperfect success of some of our public health schemes.

Beyond question, such is the increasing complexity of medical science, an even larger amount of treatment will have to be undertaken by specialists, and a good deal of it within the walls of hospitals or similar institutions; but unless the general practitioner's business takes him to these institutions to coöperate with the specialists in the treatment of his patients, he cannot possibly keep his medicine up to date and know what to expect from each specialist line of treatment. From the specialist's point of view also it must be admitted that intimate contact with the man who sees all sides of medical practice is going to lessen that narrowness of outlook which is inseparable from specialisation. In my own experience, at any rate, it is often a much more difficult problem to make a diagnosis and decide on the best line of treatment for a given patient than to actually carry it out. The general practitioner, to whose province this must mainly fall, must, therefore, always be the most important person in the medical hegemony, and any scheme of medical service that fails to take this into account is of necessity foredoomed to failure. Equally, then, from the point of view of the faculty and the public it is essential that the general practitioner should take his proper place in the public medical service of the future.

A Public Medical Service.

The provision by the State of some form of public medical service within the next few years seems to me inevitable. Whenever I have had occasion to speak of it to a lay audience the proposal has been universally applauded, and other people with much greater experience as political speakers have told me the same. We may look upon some form of State medical service, then, as certain within the next few years. Two courses are open to our profession. It may resist the inevitable till the last moment, have some ill-digested and imperfect scheme thrust upon it, like the National Health Insurance Act, or it may profit by the experience of the past and seek to mould public opinion so that when the new order comes the general practitioner may have an honoured place in it as the natural centre around which the whole scheme revolves.

HÆMANGIOMA.

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This group of tumours presents many points of interest in ætiology, in clinical manifestation, and in the problems of treatment. They are the commonest tumours of childhood, and are not rare in adult life. In many cases the superficial tissues are involved, but in spite of the consequent facilities for observation the classifications of the past have been in the main purely descriptive, and have embraced overlapping pathological and anatomical features. This confusion is usually increased in two ways. The first is the inclusion under the group name of "hæmangioma" of varicosities and aneurysmal dilatations of ordinary blood-vessels. Adami[1] has insisted on the need for a sharp line of demarcation between vascular enlargements of this type and the true tumours which we are now considering, which arise from unipotent angioblastic cells. The second and subsidiary source of error lies in the use of the term "nævus" in describing the hæmangiomata and melanomata alike. The word should be restricted to the latter group.

The chief purpose of this communication is to discuss a general plan of treatment upon the division of the tumour group into its three histological types, which are also capable of clinical distinction—the capillary, the compact, and the cavernous. This is the classification which has been advanced by Fraser,[2] and his definition of a hæmangioma may be accepted—namely, "a tumour in which there is an actual new formation of vessels, or proliferation of the vessel walls." The definition and classification will be considered more fully after a brief consideration of some of the general features of the condition.

Distribution.

In most cases a definite hereditary factor can be recognised. There is no noticeable difference in incidence among the different races of mankind, although naturally the lesions are less readily observable in dark-skinned peoples. The references in literature are very scanty, but there is reason to believe that the tumours on the whole are rarer among animals than in the human subject. Women are more often affected than men. One half of the body, limbs and trunk, may be affected—hæmangioma unius lateralis. One limb may be involved, or the zone of distribution of one nerve, such as the trigeminal, may be mapped out with varying degrees of accuracy. The smaller tumours, varying from the size of a florin to a minute speck, are common on the face and around the shoulders and buttocks. Several anatomically unrelated tumours may be present in the same individual, and bilateral symmetry is extremely rare. The gradations of size range from a growth which may necessitate the sacrifice of a limb, or, on the face, may render the unfortunate subject a source of misery to himself, or of repulsion to his fellows, to an almost invisible point of discoloration which may disappear spontaneously, or be cured at once by the touch of a fine electro-cautery.

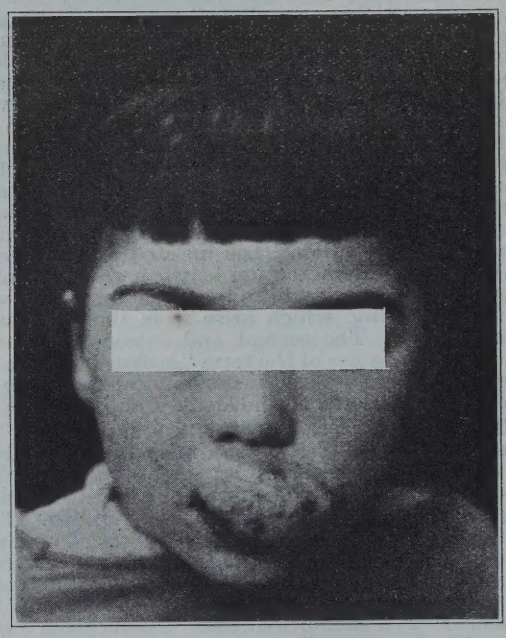
The skin, mucous membrane, subcutaneous tissue, or any of the deeper structures, including bone, may be implicated, either alone or in conjunction. A considerable number of cases have been recorded in the larynx. In the rare instances of involvement of the heart, brain, and lungs the tumour has usually been fatal.

Extension and Retrogression.

The tumour is usually present at birth or becomes visible in early infancy. Its nature may be evident from the outset or it may look bluish, like a recent bruise, the true nature of the condition manifesting itself gradually. It may remain constant in size, may grow, pari passu, with the child, or may extend rapidly. Sometimes a definite infiltration of the

adjacent structures, including bone, takes place at an early stage. In more exceptional cases, and usually at a later age, metastases occur along routes which are at present unknown.[3 4] Retrogression is also shown in a considerable number of cases; thus a

FIG. 1.



Cavernous tumour of lip. Before excision. Note small area on cutaneous surface where previous application of radium had caused tumour to "show through."

small port-wine stain, belonging to the capillary group, may completely disappear. In other cases the regressive change is shown only by the waning of the bright purple or red to a tint which is scarcely distinguishable from the surrounding skin. This process of spontaneous cure is due to a progressive diminution of the blood-supply of the tumour area, which is effected, as Ribbert[5] first demonstrated, by a stenosis of the entering blood-vessels, and also by an increase of fibrous tissue in the stroma, especially at the periphery, where, in tissues other than skin, a definite thin capsule is often found. It is common for this retrogression to accelerate markedly at the period of first or second dentition or at puberty. The clinical features are discussed in great detail in the classical and masterly monograph of John Duncan[6] on the angiomata.

Ætiology and Histopathology.

Ribbert made an exhaustive study of the development of the hæmangiomata, and was the first to describe their origin from angioblastic embryonic tissue. He strongly opposed the view, prevalent in his time, that the tumours arose from pre-existing blood-vessels which had functioned as such. Fraser[2] gives in detail the results of his observations on the histology of the various forms of the hæmangiomata and on their common origin. His new classification is based upon the histopathology, and is simple, precise, and comprehensive. It has the additional advantage that certain broad lines of treatment can be laid down for the three varieties of the tumour, as these are clinically distinguishable. The following brief descriptions are based upon Fraser's work.

Capillary Hæmangiomata.—The first evidence of the formation of the normal vessels of the blood vascular system is in the vascular layer of the embryo, where groups of specialised endothelial cells, the blood island of Pander, proliferate and become finely vacuolated. Fusion between contiguous groups takes place, their fine channels become united, and give rise to a delicate capillary network which, in time, forms the capillaries and lining of the larger blood-vessels as a continuous blood circulatory system. The origin of the hæmangiomata can be traced to the failure of certain of the cells, or cell groups, to establish contact with the developing network. Such cells proliferate and become vacuolated, as do the others, but in their disjoined state do not proceed beyond the stage of a mesh of minute irregular blind channels, through which the blood of the general circulation does not pass. The lumina of the tumour of this type are either empty or contain a few immature or degenerate corpuscular elements. Such is the capillary hæmangioma (Fig. 5A), which may grow rapidly as a tumour and may vary in size, as seen superficially, from the minute "araneus" or speck of looped capillaries on the face, to the large, flat, port-wine stain. The so-called "de Morgan" spots are probably "rests" of such endothelial cells which do not proliferate until late in life.

Compact Hæmangiomata.—Proliferation may become more intense in the cells which form the walls of the fine pseudo-capillaries, and give rise to perivascular and endovascular thickening. The result is the formation of a solid mass of cells in which the lumina are no longer visible. Such is the compact hæmangioma (Fig. 5B). This is usually a solid subcutaneous swelling, closely resembling a lipoma.

Cavernous Hæmangiomata.—The third type results from the establishment of a connexion between the general circulation and the fine channels of the capillary type of tumour. The capillary tubules become distended, the walls break down further, and pools and channels of normal blood are found in the irregular spaces which are still lined by endothelium. Many of the spaces are culs-de-sac, in which the circulation is sluggish, and thrombosis may take place, especially in the limbs. Such is the cavernous hæmangioma (Fig. 5C), which may be found at birth or may affect a capillary tumour of long standing, the change being initiated in some instances by trauma or ulceration.

The delicate stroma of the capillary and compact tumours receives a septal blood-supply from normal vessels which are only slightly increased in number and size. The entrant vessels in the cavernous type are usually increased in both respects, but not markedly. Thus, while an incision within the cavernous tumour zone may cause an alarming diffuse hæmorrhage, an approach to the tumour from without, with exposure and double ligature of

FIG. 3.

Hæmangioma unius lateras. Capillary type on abdomen where it is arrested abruptly at midline. Large breaking down areas of endothelial tissue, and endothelial lined spaces containing thrombi in limbs. Excision of protuberant masses on leg. Further treatment deferred until after puberty in expectation of some regression.

the vessels before they enter the tumour mass, occasions only slightly more hæmorrhage than the extirpation of a fibroma or other simple tumour. The exposure of the entering vessels is readily effected in most situations by traction upon the tumour mass after the superficial circumferential incision. The entering vessels can then be picked up individually, as are the intercostal branches in removal of the pectoral muscle, in the operation for carcinoma of the breast.

If the surface of a cavernous angioma becomes broken a persistent chronic ulceration, with occasional severe hæmorrhage, may be set up, and an epithelioma may develop in such an area of chronic irritation. Rarely a true infiltrating endothelioma, or even a sarcoma, may appear at the site of a hæmangioma. A cavernous tumour in a viscus such as the liver is well known; it consists of a sponge-like reticulum, in the spaces of which normal blood circulates. When the skin and subcutaneous tissues are involved, the "mixed angioma" of the old classifications, the altered skin is raised, bluish, and nodular, and bleeds very freely when incised. When a cavernous tumour is entirely subcutaneous, or there is a subcutaneous spread from an area in which the skin is also involved, there is an elevation of the skin, combined with sagging of the part as a whole, and on pressure the part seems abnormally soft. Occasionally a diffuse pulsation can be felt.

FIG. 2.

Cavernous hæmangioma of face. A, Condition prior to operation, showing several nodules at which hæmorrhage had occurred. B, Showing result of complete excision and repair by forehead pedicle flap. Searing of lower eyelid by cautery.

Treatment.

The age of the patient, the situation, size and type of the tumour, the degree of disablement or disfigurement, and the economic and psychic effects on the particular individual, must all be considered. Since spontaneous arrest and cure may occur up to the period of adolescence, it is inadvisable to embark upon drastic treatment for the larger tumours in children, unless they are extending rapidly or are in a situation, such as the orbital region, in which even slight extension may be dangerous. The solid tumours do not retrogress, and therefore the question of age does not arise. Experience shows that complete removal, with plastic repair if necessary, gives the most certain and satisfactory result in the type of case for which it is recommended below, and in the majority of cases it has been found that the patients prefer a procedure which will remove the tumour within a specified brief time, instead of a long series of applications which may have to be continued over several months or years. In the hands of some dermatologists radium has been too freely used and too highly extolled.

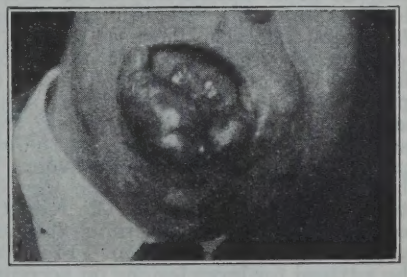
Capillary Type.—In the capillary subdivision fall the small araneus, the flat port-wine stain of all sizes, and the raised, soft, brightly coloured "raspberry" tumour, or "mother's mark," usually about the size of a shilling, and often present at birth.

The "araneus," which resembles a small-bodied spider, can be readily dispelled by touching the central point with a fine electro-cautery, or with the blunt end of an ordinary sewing needle at dull red heat. This may be done without anæsthesia, or a few minims of novocaine may be injected subcutaneously.

The flat capillary tumour of all sizes is best treated by radium, which is applied as a flat plaque. Treatment may take several years, and should always be carried out by an expert, as the dosage must be very carefully estimated, and the margin of error in concentration of the rays is a very fine one. An underdose is ineffectual, and an overdose produces a severe inflammatory reaction followed by scarring and an unsightly and permanent distension of some of the blood-vessels. Some skins appear to be unsuitable for radium application, and show a brownish discoloration below the atrophic skin, from a deposition of hæmatoidin. In such cases excision with plastic repair may be employed. In a suitable case there is a satisfactory blanching of the affected area, and although the skin remains in a permanently atrophied condition, the total improvement may be very considerable.

The small raised tumour, which is chiefly capillary, is best treated by the application of carbon dioxide snow for a period not exceeding 20 seconds. This is the method of election in children, and if properly and smoothly applied leaves practically no scar. On parts other than the face, where several applications of snow would be required, excision is to be preferred. Occasionally there is a considerable cavernous element in the structure of these cases, and carbon dioxide snow is ineffectual; here again excision must be resorted to. The subcutaneous injection of alcohol, while the tumour is emptied of blood by digital pressure, is recommended by some continental authors. It admittedly involves some risk of sloughing, and possesses no advantages over snow application or excision.

FIG. 4.



Massive cavernous condition of tongue, lower lip, and left side of face. Had apparently almost succumbed after electrolysis of tongue in childhood. Suffocation averted by tracheotomy. General health excellent; steady worker in saw-mill. Treatment not desired nor recommended.

Compact Type.—The compact subcutaneous tumour should always be excised. A distension of the superficial capillaries is sometimes found at the most

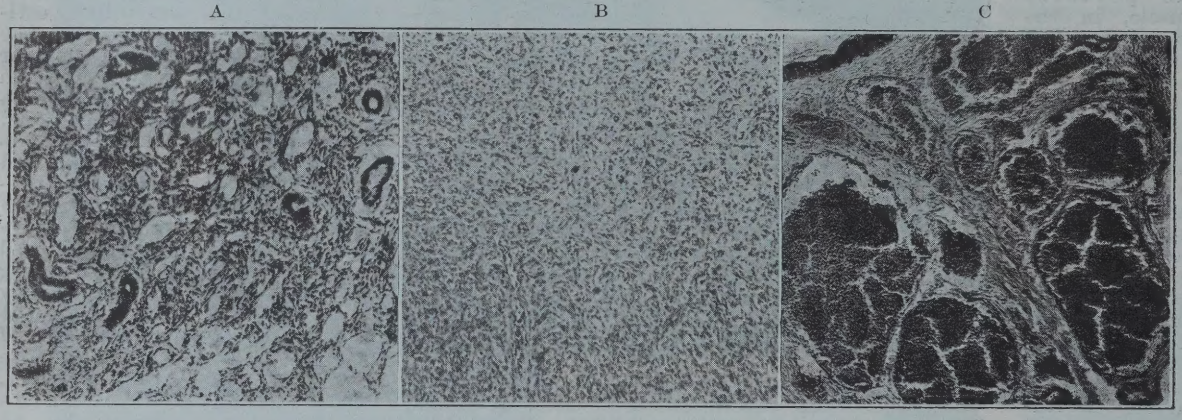
elevated part of the tumour; it is usually possible to include this small area of affected skin with the underlying tumour in the process of excision. The capsule, where it exists, is too thin to permit of any shelling-out process, but the compact mass can easily be dissected from the surrounding connective tissue without troublesome hæmorrhage.

Cavernous Type.—The cavernous tumours present the greatest difficulty in treatment. They are never confined to the skin, and any application of radium which would act upon the endothelium of the deeper blood spaces would involve grave risk to the delicate overlying skin, however careful the screening. The skin should never be sacrificed, even if it overlies an infiltrating subcutaneous tumour. Where primary suture after excision is not possible, the gap may be filled in by local flaps or advancements, but in many facial cases it is necessary to use pedicled flaps, preferably from the forehead.

Summary.

A hæmangioma arises from angioblastic endothelial cells in the vascular layer of the embryo, which remain disjoined, when other similar cell-groups link up to form the blood-vascular system. These small masses proliferate and become vacuolated, giving

FIG. 5.



Sections of A, capillary; B, compact; and C, cavernous hæmangioma.

insertion of radium "needles" into the substance of the tumour is liable to produce a very uneven result in both colour and contour, and may need months of treatment. Electrolysis has been virtually abandoned, partly because of the unevenness and uncertainty of its results, and partly because of the dangerous swelling which may attend its use in ituations in which the method would be of the greatest value, such as the tongue, lips, and buccal mucosa.

In general, excision of the whole substance of the tumour, followed by suture or plastic repair, is by far the most satisfactory form of treatment for the localised swelling, and for the diffuse subcutaneous hæmangioma with localised masses of protuberant endothelial tissue, which is met with chiefly in the limbs. The line of incision must run outside the periphery of the tumour in all aspects, except in situations such as the lip, where the application of small clamps on both sides of the affected area can permit a partial gradual excision. In this removal by stages the fibrosis of the line of repair in the tumour tends to carry on the reduction of size for a considerable time. Cavernous tumours of the tongue present a difficult problem. Free excision is not to be advised for large lesions on account of the mutilation of the organ. Small tumours, however, should be dealt with by wedge exsection. When the whole or half of the tongue is involved, treatment should be withheld, if possible, until after puberty, to allow time for retrogression. The author has recently seen a case of this type in a girl of 11, in which an attack of scarlatina followed by pneumonia appeared to initiate reduction in size. If treatment is imperative at any age, on account of repeated hæmorrhage or gross disorder of speech or mastication, radium needling should be tried, as irregularity of contour is of secondary importance to the reduction in bulk of the tongue. The possible need for tracheotomy should be mentioned beforehand, and the patient should be watched carefully while the needles are in situ and for 48 hours after their withdrawal.

No attempt can be made here to describe the methods of plastic repair for the various regions. Healthy the histological appearance of stunted blind capillaries which contain no blood. This is the capillary type of tumour. Further proliferation of the endothelial cells which form the walls of these fine channels produces the solid compact hæmangioma. The cavernous hæmangioma develops when a connexion is established between the blood-vascular system and the previously closed delicate channels of the capillary tumour. Normal blood then flows through them and ultimately produces marked distension.

The three types are clinically distinguishable, but the structural forms may be intermingled in certain tumours. Usually there is marked predominance of one type.

The treatment of the capillary type is by radium or carbon dioxide snow. The compact and cavernous tumours should be excised.

The untouched photographs (Figs. 1, 2, and 3) which accompany this article have been selected with a view to showing types suitable for excision, and one case (Fig. 4) of very large tumour in which treatment was neither desired nor advised.

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BRITISH HOSPITAL FOR CHILDREN, BELGRADE.—This institution is in danger of being closed for lack of financial support. It was opened eight years ago and has been under the control of Dr. Katherine MacPhail, who originally went out to Serbia under Dr. Elsie Inglis during the war. In that period, it is stated by the committee, which is appealing for help, it has "tended, and in many cases rescued from death or from being maimed for life, some 60,000 children whose fathers and mothers were victims of the war." All this was done in spite of the fact that very little help has been forthcoming beyond that generously given by the Serbian Government. At least £3000 a year is needed to maintain the hospital on its present footing.

THE CURATIVE ACTION OF HYDNOCARPATES AND IODIDES IN LEPROSY.

By Sir LEONARD ROGERS, C.I.E., M.D., F.R.C.P. Lond., F.R.S., I.M.S. Ret.; Physician and Lecturer to the London School of Tropical Medicine.

Dr. E. Muir, leprosy research worker in the Calcutta School of Tropical Medicine, has recently published two important papers, one on improvements in the administration of sodium hydnocarpate[1] and the other on the value of iodides and antimony in advanced cases of leprosy[2]; the time, therefore, appears opportune for a brief review of the present position of the treatment. The old Indian remedy, chaulmoogra oil, has long been used orally, but only slightly retards the disease owing to its irritating effect on the stomach. Recently, however, E. A. O. Travers found that fresh *Hydnocarpus anthelmintica* nuts are well borne and have, he thinks, a therapeutic value when given by the mouth. In 1914 Victor G. Heiser[3] reported promising results at Culion, in the Philippines, with intramuscular injections of the Mercado mixture containing chaulmoogra oil, but H. W. Wade and C. B. Lara[4] have recently reported that most of the cases subsequently relapsed, and this "decidedly heroic" method was abandoned. In a series of papers[5 6 7] published between 1916 and 1921 the present writer showed the value of subcutaneous and intravenous injections of the soluble sodium salts of gynocardic and hydnocarpic acids obtained from chaulmoogra oils, preferably that of *Hydnocarpus wightiana*. He also established the important fact that they produced specific reactions with slight fever and local swelling, accompanied by breaking up of vast numbers of the lepra bacilli, and followed by absorption of the thickened tissues and eventual disappearance of the causative organisms. There was apparent cure in no less than 40 per cent. of cases, which were much earlier than the general run of asylum ones. This effective method had the disadvantage of causing blocking of the veins in some cases by a local adhesive phlebitis; this limited its use, especially in women and children, and led to the successful introduction by A. E. Dean and H. Hollmann in Honolulu, in 1918, of intramuscular injections of the ethyl esters in place of the sodium salts and the adoption of this treatment in the Philippines and elsewhere. As recently as 1925, however, G. A. Perkins[8] pointed out that the sodium salts first used by me "in the effective treatment of a large group of cases" are more active than the ethyl esters; their use at the present time is restricted by the gradual obstruction of the veins which they cause.

"*Alepol*," *a New Non-irritating Sodium Hydnocarpate Suitable for Intravenous Use.*

As my own experience leads me to agree with Dr. Perkins that sodium hydnocarpate is a more effective preparation than the ethyl esters, I have been working during the past two years to overcome the disadvantages of the former. At the Royal Society of Medicine in February last[4] I announced that success had been obtained, with the help of Mr. T. A. Henry, D.Sc., Director of the Wellcome Chemical Research Laboratory. After making several preparations he has obtained the sodium salts of selected fractions of the fatty acids of *H. wightiana* oil, which are quite painless when given in a 3 per cent. solution subcutaneously and intramuscularly, and could also be administered in a 1 per cent. solution intravenously with good results. I also enlisted the help of Dr. Muir, who has got over the difficulty of injecting 1 and 2 per cent. solutions intravenously by the simple expedient of drawing up about an equal quantity of blood into the dose, mixing by rotating the syringe on its long axis with the needle in the vein and injecting the whole. The new preparation (which Messrs. Burroughs and Wellcome have put on the market under the name of Alepol) costs one-twentieth of the price per dose of a good ethyl ester, as well as being more active; the powdered drug, ready for making up 2 or 3 per cent. solutions, with 0·5 per cent. carbolic acid, can be supplied at a cost allowing of two full 5 c.cm. doses being given twice a week for a whole year for just over 2*s*. In view of *H. anthelmintica* being less irritating to the stomach than *H. wightiana*, I asked Dr. Muir to make some sodium hydnocarpate from the former for intravenous use, and he has found this preparation to be quite unirritating to the veins. Thus we now have a very cheap, active, painless and specific remedy, which produces reactions in leprous tissues with extensive destruction of the causative bacilli.

At the Royal Society of Medicine discussion Muir,[4] Wade, and Lara (see THE LANCET, 1927, i., 597) recorded over 1000 recoveries, showed that nearly every early case can be "cured" (Muir's own word), and that some 15 to 20 per cent. of advanced cases of eight years' average duration could also be cleared up. I pointed out in that discussion that the power to clear up even the early cases would allow a great reduction of leprosy in a single decade, wherever the simple plan of examining all the household and close contacts of newly discovered lepers every six months for five years could be carried out, as some 80 per cent. of possible new infections would thus be detected and cleared up in the early uninfective stage, and that proportion of foci of infection stamped out. After a second five years' campaign very few would remain. This plan should be feasible among all European and other educated races. What is now wanted is a more effective treatment for advanced cases, and Dr. Muir's second paper on iodides in leprosy promises a further advance in that direction.

History of the Use of Iodides in Leprosy.

Iodides have long been used in leprosy, but nearly all workers agreed that they are harmful on account of the very severe febrile and local reactions they produce, often with the appearance of new lesions. They are, however, of diagnostic value, as they induce the appearance of lepra bacilli in the nasal discharge when these were previously absent. Thus the Norwegian authorities, Danielssen and Boeck, in their classical description of leprosy of 1848, state that the French physician, Biett, was the first to use iodine preparations internally in leprosy, but that they themselves had found that they produced severe reactions followed by only temporary diminution of the nodules. Hansen, in his book on leprosy (1895), states that Danielssen "soon learned what a very dangerous remedy it (potassium iodide) was in this disease," but that he used it as a test of apparent cure, as he considered that if it produced no development of new eruptions the cure was complete. In 1908 E. Marchoux and G. Bourret[9] recorded the interesting observation that during the reactions produced by iodides, both the lepra bacilli discharged from the nose and those in nodules which softened or suppurated as a result of the reactions, showed extensive breaking up and loss of acid-fastness. This is precisely what I found in nodules showing similar reactions after intravenous sodium hydnocarpates, and it led me to persevere with the treatment. The French writers mention that nearly all previous authorities, except Siebart, regarded the iodide reactions as harmful, but they noted improvement and regarded them as specific. Currie, Clegg, and Hollmann,[10] in a valuable review of the literature on leprosy treatment, record that in their hands the inhalation by a leper of 15 to 20 minims of ethyl iodide invariably produced severe reactions within a few hours.

A study of the literature led me to think that the close similarity between the reactions and bacillary destruction produced by iodides and hydnocarpates respectively indicated further trials of the former, in spite of the severity of the reactions they produced. I was strengthened in this belief by noting the greatest

improvement I had ever seen in two advanced cases, in which a very few small doses of sodium hydnocarpate intravenously had produced very severe local reactions, accompanied by debilitating fever of over a month's duration. Yet, without any further injections, the patients continued to improve for a year, and one of them completely lost his extensive lesions and fully recovered his health. In these exceptional cases the toxins set free by the dissolution of immense numbers of lepra bacilli had evidently been followed by the development of curative antigens in the system with ultimate great improvement, or even apparent cure.

I forwarded to Dr. Muir all the abstracts I had made on the treatment of leprosy during two years' study of the literature, and in a letter dated Sept. 29th, 1922, I stated that I would send him "a preliminary account of the history of the methods of treatment, which will bring out the interesting fact that every method, including various vaccines, tuberculin, nastin, iodides, &c., which gave any definite results caused reactions with breaking down of the nodules and of the bacilli." Dr. Muir commenced trials of iodides in 1923, as he informed me in a recent letter, sending early information of the success of his four years' work, which he has just reported.[2] The most important part of this is his discovery that prolonged febrile reactions may be controlled by intravenous injections of tartar emetic, and painful nerve symptoms by subcutaneous injection of adrenalin, for this enables the drug to be given with great advantage, even in many advanced cases of leprosy. Equally important is his conclusion that, when very large doses of potassium iodide can be taken repeatedly without reaction, the case is probably completely cured; this confirms the opinion of Danielssen. Muir rightly warns against the use of this very active treatment by those with little experience of the disease, or anywhere except in institutions with full control and facilities for careful observation; the results in the large series of cases he is now treating with iodides will be awaited with interest.

Thanks to Dr. Muir's kindness in sending me an advance copy of his paper, I have been able to use potassium iodide in patients who had almost cleared up under the new sodium hydnocarpate, and I have found it of undoubted value in producing mild reactions with further improvement in such cases. In two others which I looked on as practically cured no reactions have occurred; this confirms their recovery. I therefore think that the drug may be safely used by experienced workers in cases in which all thickening of the tissues has already cleared up under alepol as the few remaining bacilli will not induce harmful reactions; also as a test of complete recovery. It may thus be used to supplement treatment by alepol and other active chaulmoogra oil preparations, until Dr. Muir's further experience enables him to lay down safe rules for its more general exhibition in active advanced cases, in which iodides may be a two-edged weapon unless used with great care. When we recall that only a decade ago we could do so little for the disease, the present position of the treatment holds out great hopes for the leper.

References.

1. Ind. Jour. Med. Research, 1927, xv., 501.
2. Ibid., p. 507.
3. U.S. Public Health Reports, 1914, xxix., 2763.
4. Proc. Roy. Soc. Med. (Sections of Tropical Diseases and Parasit., &c.), 1927, xx., 121, 149.
5. Brit. Med. Jour., 1916, ii., 550.
6. Ind. Jour. Med. Research, 1917, v., 277.
7. Practitioner, 1921, cvii., 77.
8. Jour. Philip. Islands Med. Assoc., 1925, v., 369.
9. Bull. Soc. Path. Exot., 1908, i., 347.
10. Lepra, 1913, xiii., 25.

ROYAL LONDON OPHTHALMIC HOSPITAL.—An extra Gifford Edmonds prize of £100 for the best essay on a subject dealing with ophthalmology involving original work will be awarded in December, 1929. The subject for this essay is Central Scotoma: its Pathology and Clinical Significance. Particulars may be had from the Secretary, Moorfields Eye Hospital, City-road, London, E.C. 1. The subject for the current essay to be sent in by December, 1928, is the Causation and Differential Diagnosis of Proptosis.

A NOTE ON THE USE OF TUBERCULIN IN PULMONARY TUBERCULOSIS,

WITH ESPECIAL REFERENCE TO DREYER'S DIAPLYTE.

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IT can hardly be denied that the introduction of tuberculin by Koch as a specific remedy for tuberculous affections was followed by an enormous balance of disastrous results so far as the subjects of pulmonary tuberculosis were concerned, or that subsequent attempts to revive the use of these preparations as a routine or even a frequent mode of treatment in cases of consumption have been not merely unsuccessful but actively harmful. In consequence the employment of tuberculin in pulmonary tuberculosis appears to have been largely abandoned. It is possible that the pendulum of opinion may have swung too far. Personally, I am inclined to believe that there are a few cases of chronic phthisis in which tuberculin is capable of inducing some degree of benefit. It is clearly desirable not to neglect the smallest aid that is available in a disease against which our weapons of defence are so extremely limited.

Our knowledge of the active principle at work in the various preparations of tuberculin is meagre or entirely lacking. I am inclined to think that the effective body is the same in all forms of tuberculin which have any real activity, the different preparations varying in dilution and in the presence of various extraneous foreign materials, which may complicate the results obtained without increasing the benefit to the patient. I can only speak from experience of Koch's TR and his *bazillenemulsion*, BE, among the old preparations; while recently I have used Dreyer's diaplyte vaccine, which for brevity I will call TD. This paper is written mainly with a view to calling attention to the possible value of this last form of tuberculin.

Since tuberculin is of the nature of a vaccine, we cannot hope to produce good results by its use in patients whose disease is actively progressive, and who are therefore probably suffering already from an overdose of the very poison which we are injecting. Nor is it theoretically likely that such treatment will do good in cases of long-standing and advanced disease, with emaciation and cachexia which have destroyed or gravely impaired the patients' powers of reacting to a toxin by forming increased immunising bodies and so gaining enhanced resistance. As a general principle, therefore, tuberculin should not be administered to patients who exhibit high degrees of pyrexia or who are greatly debilitated. The latter should certainly first undergo a course of hygienic treatment in order to increase their powers of response. A case mentioned below seems to indicate that even pyrexia of high degree is not necessarily an absolute bar to the use of tuberculin, but the vaccine must only be given in such cases with extreme caution. Also it should be an absolute rule of treatment to "let well alone" in early cases. If a patient is doing well on simple rest and hygienic management, or on any other special regimen, we should not, either from impatience or from a light-hearted desire to try some new method, interfere with the process of natural recovery, by the use of tuberculin, artificial pneumothorax, or any other drastic remedy. It is very easy to upset the balance of reparative forces by any kind of shock or disturbance, and it is too often very difficult to regain ground so lost.

The types of case in which I believe that tuberculin may sometimes be of use are: (1) patients who exhibit a persistent mild pyrexia in spite of continued rest in bed; (2) those who have no fever while resting, but suffer repeatedly from a slight return of pyrexia on rising and moving about; and (3) early

cases with slight laryngeal involvement. Prophylactic injections of tuberculin might also perhaps be given advantageously to delicate subjects with bad family histories. I have only had the opportunity of using TD in one such patient, a lad whose mother and sister had recently died with subacute pulmonary tubercle, and whose other sister had recently developed signs of the disease. He has so far (over two years) remained free from symptoms.

Dosage and Technique.

The dose should be almost infinitesimal at first, and should be increased very slowly under careful observation of the temperature chart and of the patient's weight and general condition. A certain psychical effect is often produced by the administration of any new remedy, and the illusory improvement which sometimes appears at first must be discounted. On the other hand, if a patient feels depressed or in any way less well after each injection, I should attach some importance to his sensations and diminish or discontinue the doses. The initial dose which I employ, using Koch's tuberculin, is 1/100,000 mg. of solid bacterial content, followed by 1/75,000, 1/50,000 mg., and so on in a febrile case, raising the doses more quickly in the absence of fever and in early cases. Dreyer's tuberculin is more concentrated, as the inert fatty matter has been removed and the solid material left is theoretically all active substance. I use an initial dose of 1/200,000 mg., and this can be raised slowly or quickly in accordance with the type of patient. In the series of observations mentioned below an initial dose of 1/75,000 mg. was employed in advanced cases and as much as 1/2000 in early disease, without ill-effects; but I have seen instances in which the smaller amount gave rise to marked febrile reaction. When a satisfactory dose has been reached, giving normal temperature and general improvement, it is best to repeat it, at all events for several ensuing injections, as it appears doubtful whether any advantage is gained by raising the dose indefinitely. It has been suggested, probably with truth, that a patient may acquire a tolerance for injected tuberculin even in large amounts and yet not gain increased resistance to the disease from which he is suffering. There seems no reason for aiming at the administration of large quantities of the vaccine.

The first trial injections may be given at intervals of five or seven days. Afterwards the intervals may be determined by the effects produced. Thus, when an injection causes a preliminary fall of temperature, which tends to rise again some days later, the time of such rise may indicate the need for another dose. After an injection an immediate rise of temperature of more than 1° F. usually suggests a diminution of the dose given; in any case it contraindicates any increase. The patient should remain in bed, and so far as is possible at complete rest, during the first two or three months of the treatment, so that no avoidable disturbance may vitiate the strict observation and record of the results obtained.

A Series of Cases.

The series of observations on the use of TD on which this note is based was carried out by my colleague, the late Dr. A. C. Inman, on some of my patients at Brompton Hospital, at the request, I believe, of the Medical Research Council, my own part in the matter being confined to general clinical supervision and advice. We submitted, rather more than two years ago, a joint report to the Council, with details of individual patients, temperature charts, and post-mortem notes in fatal cases. This was apparently not considered to be of sufficient interest for publication. Owing to the recent death of Dr. Inman, which has deprived me of the hope of further collaboration with him in such research, I have felt that his painstaking investigations into the value of TD, carried out as they were with all the exactitude of a trained scientific worker, deserved a better fate than to repose in the pigeon-hole of a Government Department. Although no definite conclusions could be drawn from the few cases available, he obtained, at any rate, some indications which might be of interest to other investigators and lead to further trial of this form of tuberculin. For the sake of brevity I shall note only a few points which struck me at the time.

At the beginning of the trial Inman chose for his subjects cases of advanced disease, many of them clinically apparently hopeless. This was done, I understood, by desire of Prof. Dreyer, who preferred that his preparation should obtain no fictitious credit from being used on patients who might be expected to improve in any case. Such a choice of cases would naturally be unfavourable to any statistical examination of the results obtained; nevertheless, it proved fortunate otherwise, since it was from a study of the fatal cases that the most definite indications as to the action of TD were obtained. Carefully administered, the tuberculin produced, so far as could be judged, no ill-effects even in these unfavourable subjects. Indeed, several patients appeared to put up an unusually good fight against the disease. One girl, aged 17, who was sent into the hospital as hopeless and unlikely to live many months, went out restored to some degree of activity and has only recently died—four years after her first admission. An older girl of 21, equally ill, lived for 11 months and seemed at first to make some improvement; while a third, who exhibited throughout a remittent or intermittent pyrexia reaching almost invariably 101°–103° F. in the evenings, also lived for 11 months—a long duration for a patient suffering apparently from so active an infection. In these cases of long duration which came to necropsy Inman noted an almost complete absence of caseation throughout the body and an unusual development of fibrous tissue around the lesions; and in the last-mentioned case there was found throughout the chest and abdomen an immense number of small, firm, white lymphatic glands, somewhat resembling haricot beans and showing no trace of caseation or softening. Clinically, it would be easy to parallel any one of these cases with others treated by ordinary methods; but it seemed to us a larger number, among our eight very advanced cases, than might have been expected on the theory of chances. The post-mortem findings suggested that some increase or at least modification of the process of resistance had occurred—in one instance apparently connected with the lymphatic system—which would correspond with the slow downward course as observed clinically in these patients.

Of the moderately advanced cases a considerable proportion improved satisfactorily at the time. The final results are not very encouraging—of 21 cases, two are well and at work, nine are alive but not able to work, nine have died, and one is unaccounted for; but, as stated above, little benefit could be expected from the use of tuberculin in this type of case. Of early cases (eight) all are alive and at work, the average interval since the end of their treatment being about three years. Two cases of tuberculous glands, and one of tuberculous peritonitis did well, and in cases complicated by laryngeal affection this condition usually seemed to be favourably influenced.

Diaplyte Vaccine in 1927.

I have myself used diaplyte vaccine in nine cases during the past year. Of these, six were cases in which there was persistent pyrexia in spite of rest in bed, and in four of these a permanent fall of temperature to normal limits was effected. In the fifth case, after a preliminary fall of fever, a relapse occurred and no permanent benefit resulted; while in the sixth, an advanced case in which the vaccine was only tried as a last resort, no good was produced beyond the psychological effect of the new remedy. The other three patients suffered from laryngeal tuberculosis with comparatively slight involvement of the lungs. In two marked improvement took place; in the third only slight immediate benefit, the patient going to a sanatorium for further treatment. Here, again, the numbers are too small to admit any inference to be drawn, but I am sufficiently encouraged to make further trial of the preparation.

In conclusion, I would mention two questions which have occurred to my mind in connexion with these investigations: 1. Is it right on completion of a course of tuberculin treatment to discontinue the injections suddenly, or should one withdraw the remedy gradually lest the patient should miss an accustomed stimulus? In Inman's cases sudden cessation was the rule, and I have hitherto followed

this procedure; but a more gradual withdrawal would seem theoretically desirable. 2. It not infrequently happens during a course of tuberculin injections, which is producing apparent benefit to the general condition and to the disease in the lungs, that a sudden attack of pleurisy intervenes and apparently undoes all the good work. The explanation is not clear. Can it be that tuberculin increases the local resistance, in the form of fibrosis,[1] and has little or no effect on the general (humoral?) immunity of the patient, in whatever this may consist?

I take this opportunity of expressing my sincere thanks to Prof. Dreyer for his kindness in furnishing me with a liberal supply of his vaccine.

THE SCHICK TEST AND IMMUNITY TO DIPHTHERIA.

BY ROBERT CRUICKSHANK, M.D. ABERD., D.P.H.,

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ALL probationer nurses on the staff of Belvidere Hospital for Infectious Diseases, Glasgow, have been, since 1922, tested by the Schick test for susceptibility to diphtheria. They are tested from two to four months after commencing nursing duties, as they are on probation for three months before being permanently appointed to the staff. During 1926, 85 probationer nurses, whose ages ranged from 18 to 24 years, were Schick tested, and of these 25 (or 29·4 per cent.) reacted positively. Groups of about 20 nurses were tested at one time, and in each batch the number of positive reactors was about 30 per cent. Twenty-four of the twenty-five nurses who reacted positively were given immunising doses of the prophylactic toxoid-antitoxin mixture (Burroughs Wellcome and Co.). A small initial dose of 0·1 c.cm., as a test of sensitivity, was first injected subcutaneously, followed three days later by a 1·0 c.cm. dose, and at weekly intervals thereafter by second and third doses of 1·0 c.cm. One nurse gave a moderately severe reaction after the first 1·0 c.cm. dose (temperature 101° F., arm painful and swollen, sore-throat, and general malaise), and seven nurses had slight elevation of temperature, with painful arm and some malaise. The others, apart from some stiffness of the arm, did not complain.

Ten out of 12 nurses immunised in April, 1926, were retested in November, and two of these still gave weak positive reactions. These two nurses were given a further dose of 1·0 c.cm. of the toxoid-antitoxin mixture in December, 1926, and when retested in March, 1927, reacted negatively; 11 of the 12 nurses immunised in December, 1926, were retested in March, 1927 (three months after immunisation). All reacted negatively, and when tested a fortnight later with a stronger dilution of toxin only one gave a weak positive reaction. Individuals who prove refractory to the ordinary course—probably because of a deficient antibody reaction in their "make-up"—require a more intensive course of immunisation, and it is obviously important that immunisation should not be discontinued until the patient has become negative to the Schick test. Such people are analogous to the patients, of whom there are well-authenticated instances, who develop second and third attacks of diphtheria.

Value of the Schick Test.

From January, 1924, to January, 1927, six out of a total of some 200 probationer nurses who joined the staff during that period developed faucial diphtheria *before they were Schick-tested.* Of those who were Schick-tested, two nurses developed sore-throats and had positive cultures, but did not show any evidence of clinical diphtheria; one of these had been Schick-positive, and had been given the full immunising course two years previously, while the other had been Schick-negative. One nurse who had given a strong positive reaction developed faucial diphtheria with extensive membrane on both tonsils and uvula six weeks after immunisation, and before a second Schick test was done. Altogether, therefore, during the past three years only one nurse has developed clinical diphtheria after being Schick-tested; in her case the disease appeared six weeks after immunisation, a period regarded as being too early for the complete development of immunity.

During the years 1916–21—that is, in the period prior to immunisation—there were 30 cases of clinical diphtheria among the nursing staff of the hospital, or an average of five every year, which, in addition to the impairment of health of the individual and the crippling of the staff, was costing the corporation approximately £90 per annum. The cost of immunisation has been reckoned by Graham Forbes[1] as about 3*s.* for every school-child; it must be considerably less for a hospital nursing staff. The cost of immunising a fresh batch of 50 probationer nurses each year would, therefore, not exceed £5.

These results illustrate the value of modern methods in controlling the incidence of diphtheria among the personnel of a fever hospital. All nurses should be Schick-tested immediately on joining the hospital staff, and only those reacting negatively should be allowed to nurse in diphtheria wards until such time as the positive reactors have been immunised.

Environment.

It has been shown by W. H. Park,[2] J. L. Lavan and E. C. Black,[3] and others, that town dwellers develop an immunity to diphtheria more quickly and in greater proportion than do country dwellers, and, further, that a larger percentage of slum-bred children are Schick-negative than are the children of the well-to-do classes. An analysis of the previous environment of 50 nurses who reacted positively to the Schick test showed that 20 had lived in the country or in villages, 18 in small towns or in the suburbs of large towns, and 12 in large towns—i.e., 38 (or 76 per cent.) had been brought up in the country or in small towns. A similar analysis of 50 nurses reacting negatively showed that 34 (or 68 per cent.) had lived in the country or in small towns. In other words, practically the same proportion of those who had developed immunity to diphtheria came from the country, as did those who were susceptible. It is therefore suggested that age eliminates the influence of environment in the development of a gradually acquired immunity.

Summary.

The testing of nurses by the Schick method, and the active immunisation of those found to be susceptible to diphtheria has given satisfactory results, and has almost entirely eliminated the incidence of clinical diphtheria among the nursing staff of a large fever hospital.

I wish to thank Dr. T. Archibald, medical superintendent of Belvidere Fever Hospital, Glasgow, for permission to publish this work, and Dr. R. A. O'Brien, of the Wellcome Physiological Research Laboratories, for the material and many helpful suggestions.

[1] The different possible actions of tuberculin were discussed by Dr. Georg Schröder in his article on Specific Stimulation Therapy and Protective Inoculation in Tuberculosis, THE LANCET, 1927, i., 167.

[1] Prevention of Diphtheria. Medical Research Council, Special Report Series No. 115. H.M. Stationery Office.
[2] Park, W. H.: Jour. Amer. Med. Assoc., 1922, lxxix., 1584.
[3] Lavan, J. L., and Black, E. C.: Ibid., 1927, lxxxviii., 895.

EXTENSION OF BRADFORD MUNICIPAL HOSPITAL.—Proposals are being considered for the extension of the operating facilities and the provision of additional accommodation for nurses. In 1920 there were 428 operations; last year the number reached 2249. The present nurses' home holds only 50 of the 200 nurses; the remainder are housed in old buildings which are said to be fit only for demolition.

THE MORTALITY OF OPERATIONS UPON THE ENLARGED PROSTATE.

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RECENTLY published statistics showing the deaths after operation upon the enlarged prostate in this country compare very unfavourably with the low mortality-rate claimed by surgeons in America and on the continent. The mortality of four London hospitals is said to vary between 13·1 per cent. and 20·1 per cent. for enucleation of the prostate, and between 12·9 per cent. and 20·8 per cent. for all operations, including suprapubic cystotomy and enucleation of the prostate by the single-stage and the two-stage methods.[1] It is doubtful whether any operative procedure upon a non-malignant condition is justifiable if the death-rate be 20 per cent. or over. The prognosis for the patient with prostatic disease appears even gloomier from the comparisons made by Sir Cuthbert Wallace, in his recent Bradshaw lecture[1] at the Royal College of Surgeons, between the mortality-rates of operations upon hospital patients in the two periods 1910–16 and 1922–26. Though these figures show the mortality in suprapubic enucleation to have decreased from 20·2 per cent. to 14·5 per cent., the total operative mortality (including cystotomy alone) had actually risen from 20·2 per cent. to 22·5 per cent. The figures indicate either a lack of progress in operative technique or a failure on the part of the practitioner to recognise the condition before the renal function is impaired—for, apparently, uræmia is the most frequent cause of death, and hæmorrhage a rare complication of the operation.

The high mortality figure led me to investigate the post-operative mortality for operation upon the enlarged prostate at the Urological Clinic in King's College Hospital. The five years 1922–26 were taken, and the following figures obtained :—

1222–26.—Total operation cases, 136. In 126 cases the prostate was removed; in 122 cases this was performed in one stage, with ten deaths, giving a mortality of 8·2 per cent. In four cases the operation was done in two stages, with one death, bringing the total mortality of prostatectomy to 8·7 per cent.

Prostatectomy.	No. of cases.	Deaths.	Percentage mortality.
1. Single-stage operation ..	122	10	8·2
2. Two-stage operation ..	4	1	25·0
Total	126	11	8·7

In ten cases suprapubic cystotomy alone was performed with seven deaths, making the total mortality for all three operations 13·2 per cent.

These figures, though not unduly low, are more encouraging.

Technique.

I wish to lay particular emphasis on the operative technique employed in these cases as a routine, which is that introduced by Sir John Thomson-Walker, and usually described as "open prostatectomy." This is an unfortunate misnomer, and appears to have led to a misunderstanding of the method. Sir Cuthbert Wallace, in his Bradshaw lecture,[1] suggests that the prostate is removed under the eye of the surgeon. This, however, is not so. In the Thomson-Walker operation the enucleation of the prostate is done blindly, and the prostate is not seen until it is withdrawn from the suprapubic wound. This is the first stage of the operation. As soon as removal has been effected, the patient is placed in the Trendelenburg position, and the prostatic cavity is exposed by placing a self-retaining retractor in the bladder. The necessity for this step is frequently obvious. Large tags of torn prostatic capsule are often seen bridging across the internal meatus, particularly in cases in which the prostate was of the "adherent" type. Small residual adenomata are sometimes seen. Removal of such tags and nodules is readily effected by means of long curved scissors. Often one or two vessels can be seen throwing a stream of blood across the cavity from side to side; these can be caught in artery forceps and ligatured. Finally, a continuous hæmostatic suture is inserted between the posterior lip of the meatus and the adjacent edge of the prostatic capsule, and there is usually no further bleeding at all. With a perfected technique the whole operation, from the time of the incision in the skin to the insertion of the last stitch, should not take longer than 20 minutes.

The operation has suffered much adverse and totally undeserved criticism. This may be partly due to misunderstanding created in the minds of critics by the unfortunate description of the operation as an "open prostatectomy," but the attitude of most critics rouses a suspicion that they have not read the description completely, and have never actually seen the operation performed. In surgical text-books, with one or two notable exceptions, the operation is mentioned only to be condemned. First, because the exposure of the prostatic cavity is alleged to prolong the operation unduly and unnecessarily. As has been stated, the operation should be completed within 20 minutes, so that any criticism on this basis is unwarranted. Secondly, because "shock" is stated to follow the insertion of the bladder retractor and examination of the prostatic bed after enucleation. The most recently published British text-book on surgery, in advocating irrigation of the prostate cavity immediately after operation to secure hæmotasis, states :—

"This practice (irrigation) will obviate the necessity for pulling up and exposing the prostatic bed to arrest hæmorrhage, as advocated by Thomson-Walker, a proceeding attended by *great shock.*"

The prostatic bed is not "pulled up" in the Thomson-Walker operation. Hæmostasis is obtained by ligature of obvious bleeding points, and by the introduction of a hæmostatic suture. This procedure cannot be responsible for any appreciable amount of shock. If it were, shock should figure largely in this series as a cause of death after operation. (The causes of death in the fatal cases are given below.) Further, the total mortality of the operation could not be expected to compare as favourably with that given for the blind operation of Freyer if the amount of shock were appreciably greater. No one can dispute that a varying degree of shock is always associated with prostatectomy, however performed. The shock is due almost entirely to the enucleation of the prostate from its bed. Criticism of the Thomson-Walker operation on these lines is therefore groundless.

Indirect criticism is levelled at the operation, in other books, by upholding the older method of Freyer, which is stated to be highly satisfactory, and the cases to do "quite well." "Quite well" is a broad phrase. It may justly be applicable to the immediate prognosis of Freyer's operation but, judging from the series of cases which have attended the Urological Clinic for difficulty in micturition after having a prostatectomy done by the Freyer method some years previously, and by the 69 cases of severe obstruction following prostatectomy by the Freyer method recently published,[2] it must be modified. Such cases are usually shown at operation to have a dense mass of tissue filling the prostatic cavity, with a pin-hole internal meatus. It is true that one case attended the clinic with obstructive symptoms five years after prostatectomy by the Thomson-Walker method, but this was due to the growth of a fresh adenoma from prostatic remains. The specimen was shown recently at a meeting of the Urological Section of the Royal Society of Medicine. It was successfully removed at the second operation, and the case is included in the present series.

[1] Cuthbert Wallace: THE LANCET, 1927, ii., 1059.

[2] Thomson-Walker: THE LANCET, 1927, i., 1009.

The criticisms of the operation, therefore, are groundless. The operation, in fact, is abundantly justified by the mortality from it, which compares very favourably with that of any recent figures published for the older operation, and by the fact that the risk of subsequent obstruction is reduced to a minimum.

Causes of Death after Operation.

Of the 11 deaths following removal of the prostate, ten followed the single-stage operation, giving a mortality for that operation of 8·2 per cent., and one followed the two-stage operation, a mortality of 25 per cent. (for four cases) for that method. The total mortality for both methods was 8·7 per cent. The ages of the patients who died ranged from 63 years to 79 years, ten being 65 and over. The mean for the group was 69·4 years. This is above the average age for all cases operated upon (65·5 years). It is of great interest to note that of 28 patients operated upon under 60 years, not one was lost.

Of the ten deaths following the single-stage operation the following causes are recorded: uræmia, 4; pyelonephritis, 2; cardiac failure, 2; hæmorrhage, 1; shock, 1. After the two-stage operation one patient died from acute broncho-pneumonia.

In order to dispel any doubts with regard to the assignment of these causes, a short note is given on each case.

Uræmia.

CASE 1, aged 67.—Death occurred nine days after operation. On the day preceding death the blood-urea was 250 mg. per c.cm. Before operation there were no symptoms of renal insufficiency, and the urea concentration in the urine was over 2 per cent.

CASE 2, aged 75.—Death occurred in 48 hours. The blood-urea before operation was 52 mg. per c.cm. The patient recovered for a short while after the operation. In the first 24 hours the urine was coloured red, but there was no severe hæmorrhage.

CASE 3, aged 63.—Death occurred 19 days after operation. For a few days preceding the death hiccough was incessant, and during the last two days there was vomiting. Before operation the blood-urea was 93 mg. per c.cm. There were no symptoms of uræmia, and the urea concentration in the urine averaged 1·93 per cent.

CASE 4, aged 67.—Died on the seventh day. Commenced to hiccough on the third day and did not cease until the collapse, which preceded death. There was severe and intractable constipation.

Pyelonephritis.

CASE 5, aged 65.—Death occurred on the fortieth day after operation. Post-mortem examination showed acute pyelonephritis and ureteritis. The renal pelvis and calyces were dilated. The pelvic colon was also inflamed, and ulcerated.

CASE 6, aged 79.—Death occurred on the seventeenth day after operation. Post-mortem examination showed acute suppurative pyelonephritis, with dilated pelves and calyces This patient was a diabetic, and on admission the blood-sugar was 0·31 per cent. After appropriate treatment of the diabetes the blood-sugar was reduced to 0·121 per cent. by the day of operation.

Cardiac Failure.

CASE 7, aged 65.—Death occurred on the eleventh day after operation. Well in the morning, he suddenly collapsed and died. Death was no doubt accelerated by the troublesomeness of the patient, who, on the second day, contrived to remove both drainage-tubes and catheter, and walk about out of bed.

CASE 8, aged 73.—Died 18 hours after operation. Was emphysematous and had an enlarged heart. He was pronounced fit for operation by the physician. Before death the heart was dilated, with coupling of the beats.

Hæmorrhage.

CASE 9, aged 65.—Death occurred from hæmorrhage 24 hours after operation. The cavity was packed twice without avail.

Shock.

CASE 10, aged 77.—Died within 12 hours of operation, without regaining consciousness. Bleeding from the prostate cavity was practically nil.

Acute Broncho-pneumonia.

CASE 11, aged 67.—Died 34 days after operation. Post-mortem examination showed acute broncho-pneumonia.

Commentary.

The most biased critic of the Thomson-Walker operation will admit that one death from hæmorrhage out of 126 cases (less than 0·8 per cent.) is a low figure—perhaps lower than can be shown for a similar series of operations by the old method of Freyer. The value of examining the prostatic cavity for bleeding points, and of the hæmostatic suture, is self-evident. The low mortality from operative shock (again less than 0·8 per cent.) affords ample proof that the second part of the operation makes no appreciable addition to the shock due directly to enucleation. In both cases of death due to pyelonephritis, the renal calyces and pelves were dilated. It is probable, too, that in three of the four cases in which uræmia was the cause of death, sepsis played a part. Patients rarely die from ascending pyelonephritis if the kidneys are healthy. Sepsis and uræmia together account for 60 per cent. of the deaths following the one-stage operation, and are therefore the complications most to be feared. This relatively high mortality can only be eliminated by earlier operation. It is not so much a question of better diagnosis, which is not as a rule difficult; it is realisation of the dangers of delay in sending a case to hospital that alone can reduce the mortality. Many of the cases operated upon attended hospital for the first time with acute retention, and usually there was a history of increasing difficulty for many years. The practice of "cooking" a prostate until it is bad enough for operation cannot be too strongly condemned, and until it is abolished sepsis and uræmia will always be the predominant causes in any operative mortality list.

Cardiac failure is in rather a difficult category. In any major operation, in which shock is unavoidable, on men over 60 years of age, occasional deaths from this cause must occur, and careful selection of cases is necessary if it is to be avoided.

Clinical and Laboratory Notes.

A CASE OF CEREBELLAR TUMOUR.

BY A. GURNEY YATES, M.D. EDIN., M.R.C.P. LOND.,
PHYSICIAN, SHEFFIELD ROYAL INFIRMARY.

THIS case is similar in several respects to that of intracranial neoplasm described by Dr. John Inkster in THE LANCET.[1]

The patient was a female child of 5, with a history of a purulent discharge from the right ear since she was 8 months old. For several weeks she had suffered from bilious attacks, which, however, were infrequent and attracted little attention. Three weeks before attending hospital on Oct. 24th vomiting began to occur almost daily, and other symptoms suggestive of intracranial disease made their appearance. A squint developed, she began to complain of headaches, her walking was noticed to be unsteady, and her mentality became increasingly sluggish. The pupil reactions were normal, but the right pupil was a little larger than the left, and the right optic disc showed very slight swelling, the left being normal. There was an internal squint from paralysis of the right sixth nerve. There was no nystagmus, the tongue was clean, and the temperature and respirations were normal. The right ear was discharging, but there was no tenderness over the mastoid process. The child looked ill, and mentally was slow and dull. Both arms were ataxic, the right being definitely more so than the left. The muscles of the right arm were atonic, and the biceps and triceps jerks were absent on both sides. Both legs were slightly ataxic and the knee- and ankle-jerks were absent. The plantar reflexes were flexor.

The history and symptoms were strongly suggestive of a right cerebellar lesion, and in view of the old infection in the right ear she was sent to the wards with a provisional diagnosis of a right-sided cerebellar abscess.

The mastoid and the middle and posterior fossæ of the skull were explored by Mr. W. S. Kerr but no pus was found. Her condition remained unchanged for several

[1] THE LANCET, 1927, ii., 1074.

days and a further exploration of the right cerebellar region was contemplated, but she suddenly died.

At the autopsy the cerebral convolutions were found to be flattened and the ventricles greatly distended. A very well-defined pressure cone was seen on the inferior aspect of the cerebellum, distorting the medulla. There was no meningitis, but on opening the right lobe of the cerebellum a tumour, somewhat larger than a large walnut, was found embedded in its substance. It was firm in consistency and translucent in appearance. On section it proved to be a glioma.

As in Dr. Inkster's case, the presence of a primary focus of sepsis and the comparatively recent onset—though in my own case slight symptoms had been present for several weeks—led to the erroneous diagnosis of an abscess. The almost complete absence of optic neuritis supported this error, as severe and early optic neuritis is the rule in cerebellar tumour.

A CASE RESEMBLING ADDISON'S DISEASE

TREATED WITH PITUITARY EXTRACT.

By EDWARD C. B. IBOTSON, M.D. LOND.,
MEDICAL OFFICER, DOLGELLY UNION AND LONDONDERRY HOSPITAL, MACHYNLLETH.

THE following case is of interest because: (1) Addison's disease is uncommon; (2) a case of such deep pigmentation is not often seen; (3) the apparent reaction to pituitary extract is unusual; (4) mental symptoms and headache were marked; (5) benefit was apparently derived from pepsin and pancreatin (pancreas is supposed to be antagonistic to suprarenal).

I first saw the patient, a widow, on Sunday, Jan. 2nd, 1927, when I was told that she had been ill for three years, off and on. I found her very asthenic; the pulse was slow, very feeble, soft, and compressible; voice very weak; temperature 97° F. She complained of severe headache; she had some bronchitis, but no signs of pulmonary tuberculosis, and the sputum was negative. She was vomiting up food, froth, and mucus. She was deeply pigmented everywhere, her face a chocolate colour, hands nearly black, chest, back, and abdomen all a deep chocolate; black pigment inside mouth on gums, cheeks, and tongue. I was informed that she was noisily delirious at night. I concluded that she had Addison's disease. There was no anæmia or wasting and the urine was normal throughout.

I put her on whole pituitary gland, grs. 2, night and morning, with the idea of raising the blood pressure. Moreover, Sajous considers that the pituitary stimulates adrenal secretion. I also gave her tablets of pepsin and pancreatin, grs. 2½ of each t.d., and ordered her invalid Bovril, Bengers Food, and soda and milk.

I intended to give suprarenal gland when I obtained a stock, but I did not give it as the improvement from the first was rapid and extraordinary. By Jan. 5th the mental state had become normal and the vomiting had quite ceased on Jan. 8th. The systolic blood pressure on Jan. 14th was 115. She was retaining all food and growing cheerful. I saw her again on the 25th, when she was up and dressed and apparently quite normal in every way, cheerful, and active, and her eyes bright. The pigmentation had not altered at all. On Feb. 25th she had had a return of the asthenia, which was again cured by whole pituitary in doses of 2 g. (Burroughs Wellcome tabloids) night and morning. Her systolic blood pressure in May was 122.

The patient remained under observation until September, 1927, and gained sufficient strength to come and see me at the surgery, a distance of over a mile. An attempt to substitute adrenal extract for pituitary met with no success, nor did another make of pituitary give the same feeling of well-being. The blood pressure kept up to 120 systolic. The eyes were remarkably bright, in fact lustrous. The pigmentation remained quite unaltered. The mental state was peculiar, she had suspicions that people were watching and following her and trying to rob her. She left the district in September, travelling alone, but I hear that she is still alive and keeping up and about.

The case does not present any aspect of pernicious anæmia; the hæmoglobin and red cell counts were nearly normal. None of the many forms of pigmentation mentioned by Osler fits in with the facts of this case. The asthenia was profound and the vomiting severe, and together with the long duration and the deep pigmentation seem to indicate some form of suprarenal disease. Apparently there is much more disturbance of the suprarenal cortex in this patient than of the medulla. Osler mentions cases of Addison's disease living from six to ten years, and even cases of recovery. This case appears to favour Sajous's view that pituitary extract stimulates the production of adrenalin.

A CASE PRESENTING A CLINICAL PICTURE OF CONGENITAL HEART DISEASE

WITH CONTRARY PATHOLOGICAL FINDINGS.

By NOEL F. PEARSON, M.R.C.S.ENG.,
HOUSE SURGEON, BRADFORD CHILDREN'S HOSPITAL.

THE interesting feature of this case is the almost typical picture of congenital heart malformation, associated with very unexpected and unusual post-mortem findings.

The patient, a boy aged 6 weeks, was the fourteenth child. He was brought to the Bradford Children's Hospital because he had not thrived since birth. The mother said he had been a seven-months' baby, but the birth-weight was 7 lb. 1 oz. Since birth there had always been feeding difficulties, and the child had always had a blue tinge about its face and lips.

Clinical Examination.—Weight 6 lb. 6 oz. The marked feature was the colour of the child; its face and lips had a bluish-green appearance, and its extremities were bluish-pink and cold. The heart showed no enlargement, but a fairly loud double murmur was audible over the whole of its precordium, more marked at the base.

Clinical Course.—During the time the child was in hospital it took its food fairly well, but lost 3 oz. in weight. Some days the cyanosis was more marked than others. On five occasions it had a slight rise in morning temperature (to 99·6° F.). Diagnosis: congenital heart disease. The child died three weeks after admission.

Post-mortem examination included all the organs except the brain. Nothing abnormal was found beyond a certain amount of free fluid in the abdominal cavity, until the heart was examined. There was no excess of free fluid in the pericardial sac. On the anterior surface of the right ventricle was a patch of pericarditis, about the size of a two-shilling piece. The heart was slightly enlarged generally, but the chambers, all the valves, the aorta, and the pulmonary artery were perfectly normal.

The only conclusion is that death was caused by some general infection, unknown, of which the pericarditis was a local manifestation.

My thanks are due to Dr. W. Hayburn, hon. physician, and Dr. Ralph Rimmer, pathologist to the Bradford Children's Hospital, for permission to publish this case.

TREATMENT OF DIPHTHERIA CARRIERS.

By PAUL BOUSFIELD, M.R.C.S. ENG.,
PHYSICIAN TO THE LONDON NEUROLOGICAL CLINIC, MINISTRY OF PENSIONS.

THE waste of time and money sometimes involved in the treatment of diphtheria carriers is well known to all medical officers of health, and any method of treatment which gives promise of certainty in its action is worth pursuing further. I therefore feel that a note on a method recently practised by myself may be of some interest.

I recently had a carrier who for three months defied the usual method of painting with Löffler's solution. An occasional single negative swab was obtained from the throat, but never a sequence of them. I then had the throat *sprayed* with an atomiser and afterwards painted with a 5 per cent. solution of mercurochrome 220. This was done daily for a week and at the end of that period three consecutive negative swabs were obtained. I have since used the same treatment on another carrier with a similar result; in a week the throat was quite free from the Klebs-Löffler bacillus.

While the number of cases does not prove mercurochrome 220 to be a specific, yet it is sufficiently suggestive to make it worth the serious consideration of practitioners. Mercurochrome 220 is not nearly so unpleasant in the mouth as Löffler solution, and this is by no means unimportant when dealing with children.

Medical Societies.

PATHOLOGICAL SOCIETY OF GREAT BRITAIN AND IRELAND.

A MEETING of this Society was held in the Medical School, St. Thomas's Hospital, London, on Jan. 6th and 7th, Profs. L. S. DUDGEON and J. M. BEATTIE in the chair.

G. SCOTT WILLIAMSON and INNES H. PEARSE (London) hold that Graves's disease is due to an excess of the real secretion of the thyroid gland which contains no iodine and does not accelerate the metamorphosis of tadpoles. A short course of iodine, partial excision or rest in bed all lead to the appearance of colloid which contains iodine and is active in the tadpole test.—J. DAVIDSON (Glasgow) described an example of the rare condition in which osteophytes arise inside the skull during the puerperium; the dura is thickened and œdematous and contains foci of amorphous calcareous deposit as well as true bone.—S. C. DYKE (Wolverhampton) detailed a case of long-standing jaundice with multiple xanthomata and splenomegaly, the latter due to great numbers of large phagocytic cells showing no lipoid histologically, though on chemical analysis the spleen contained much cholesterol: the blood cholesterol was extremely high.—J. B. DUGUID and J. MILLS (Cardiff) had found that doubly refractile crystals developed in tissues kept in watery liquids even after thorough fixation in formalin.—G. HADFIELD (Bristol) had met with four cases of acute bilateral necrosis of the globus pallidus, three of them after coal-gas poisoning. There was extensive ferruginous infiltration of the walls of the blood-vessels which was found also in many normal brains.—M. J. STEWART and S. J. HARTFALL (Leeds) drew attention to the abundance of lipoidal foamy cells in the stromata of certain tumours, due to the phagocytosis of the remains of degenerated tumour cells. They also described a case in which multiple adenomata composed of pancreatic islet tissue were found in the pylorus and duodenum.—T. LUMSDEN (London) discussed the causes of regression in implanted tumours; this, he thought, was due in immunised animals to the tumour cells being killed by blood antibodies and the secretions of leucocytes rather than to a failure of the host to provide stroma.—A. M. BEGG and J. A. MURRAY (London) from a study of the growth of a filtrable fowl tumour concluded that the tumours resulting from the inoculation of dead cells arose from the endothelium of the blood-vessels of the host; hence the tumour was a real endothelioma—J. S. YOUNG (Leeds) by putting a mixture of Soudan III bile-salts and oil into the pleural cavity had induced remarkable proliferation, hyperplasia, and metaplasia of the pleural endothelium and the alveolar epithelium, in one instance going as far as stratified squamous epithelium.—L. J. WITTS (Cambridge) described the increase in the monocytes of the blood which could be induced by *B. monocytogenes* and extracts of lymphoid tissue.—R. MUIR and J. S. YOUNG (Glasgow) found that free hæmoglobin circulating in the blood was not excreted into the bile; it did not lead to an accumulation of iron in the liver but in the kidney.—A. E. BOYCOTT (London) discussed the use and abuse of the word "antigen."—A. FELIX and L. OLITSKI (Jerusalem) described a long series of observations on the use of preserved bacterial emulsions for diagnostic agglutination tests by qualitative receptor analysis; H agglutinins are often absent in human typhoid and nothing is so satisfactory as live bacilli.—F. W. ANDREWES (London) had noticed that the colonies of hæmolytic streptococci on plates could be distinguished into "rough" and "smooth"; the rough were more virulent and agglutinated specifically, the smooth giving group reactions.—G. H. EAGLES (London) dealt with the same topic; he had found rough, smooth, and intermediate colonies by continued culture on serum agar; in one case the rough, in another the smooth were more virulent. The forms were quite distinct by agglutination but yielded equal amounts of the same toxin.—F. S. FOWWEATHER (Leeds) preferred the neutral potassium oxalate method with neutral potassium gold chloride for the preparation of gold sols for the Lange test.—A. T. GLENNY, C. G. POPE, and H. WADDINGTON (Beckenham) found a borax-boracic acid salt mixture the best diluent for Schick toxin.—R. A. O'BRIEN and C. C. OKELL (Beckenham) said that human experience had shown that diluted toxins for the Schick and Dick tests kept quite satisfactorily in this diluent.—G. R. JAMES, A. JOE, and R. SWYER (London) found that scarlet fever toxin could be preserved without loss of potency for Dick testing by drying over sulphuric acid and phosphorus pentoxide.—T. DALLING (Beckenham) reported that *welchii* toxin and antitoxin could be titrated by intravenous injection in mice, intradermically in guinea-pigs, or by the hæmolytic effect in vitro, and proposed a provisional antitoxic unit.—P. HARTLEY (London) found that the simultaneous injection of muscle extract or peptone broth much depressed the antitoxic response of a guinea-pig to a second injection of diphtheria toxin.—C. H. BROWNING and R. GULBRAUSEN (Glasgow) showed that experimental trypanosomiasis in mice might be ultimately cured after repeated relapses by giving the same dose of the same trypanocidal preparation.—W. H. TYLER (Cardiff) described the preparation of an extract of tubercle bacilli active in the tuberculin reaction by extraction with water and dilute alkali, precipitation with acid and ammonium sulphate and dialysis.—J. W. MCLEOD and J. GORDON (Leeds) showed that an oxidase test with dimethylparaphenylenediamine was a useful help in isolating the gonococcus, the cholera vibrio, and other bacteria.—C. H. WHITTLE (Cambridge) found types I. and III. of the pneumococcus more virulent than type IV.; all strains isolated from cases of pneumonia, broncho-pneumonia, and empyema were highly virulent.—E. C. LOWE (Liverpool) suggested from his experience that the organism responsible for an infection might be isolated from a mixture by a preliminary incubation in the patient's fresh blood.—W. MAIR (London) described a uniquely virulent strain of *B. diphtheriæ*, the effects of which could not be wholly neutralised by any quantity of diphtheria antitoxin.—J. CRAIGIE (St. Andrews) found that by violent shaking the flagella could be detached from the typhoid bacillus (without killing the organism) and subsequently broken up practically to invisibility; the flagella and stripped bodies each show their characteristic agglutination.—D. NABARRO (London) described his observations on the variability and mutations of dysentery bacilli and the occurrence of anomalous forms in human stools.—F. H. STEWART (Cheddleton) showed variation and papillation in *B. coli mutabilis*; A. H. MILLER (Bournemouth) films of blood and bone-marrow from acute myeloblastic leukæmia; E. H. LEPPER and E. SYLK (London) infarction of the uterus from syphilitic arteritis; E. H. LEPPER and D. CAREW-HUNT (London) a congenital hernia of the diaphragm; M. J. STEWART and A. L. TAYLOR (Leeds) an adenomyoma in a Meckel's diverticulum; G. S. WILSON (London) an improved pattern of McIntosh and Fildes's anaerobic jar; G. S. WILLIAMSON (London) specimens illustrating the development of the lymph system of the thyroid; and C. V. PATRICK (London) thoracopagous twins.

LIVERPOOL MEDICAL INSTITUTION.

AT a meeting held on Dec. 15th, the President Dr. J. C. M. GIVEN, in the chair, Mr. R. WATSON JONES read a paper on the

Ritual of Fracture Reduction.

He said that the most valuable—and at the same

time the most ignored—of the many auxiliaries of treatment introduced since the pioneer days of Hugh Owen Thomas and Sir Robert Jones, was radiographic control, now so perfect that plaster and certain metal splints offered no barrier. The modern routine of fracture-reduction must include not only manipulation followed by fixation, but also immediate radiography to determine the position which was being fixed. If this was shown to be imperfect, the routine—manipulate, fix, X ray—must be repeated as often as necessary, on consecutive days, until the position was perfect. Fractures must be regarded as emergencies, and the organisation of a hospital's fracture department should provide for the immediate institution of treatment, with further daily attention until full reduction was secured. The twice-weekly fracture clinic was as obsolete as the once-weekly operating day. The combination of such a routine with control throughout by X rays rendered fracture-reduction simple and certain, and perfect results could be secured, in more than 90 per cent. of recent fractures, by manipulation alone. When operative reduction was necessary intramedullary ivory pegging was the operation of choice, because of the perfect apposition, impaction and alignment ensured. The importance of impaction was seen in the relatively slow union after autogenous bone-pegging. The results of 20 cases of medullary pegging (including 12 from a total of 200 recent and old fractures of the forearm) showed that in the absence of infection union was never delayed, and disappearance of the peg was complete in three to six months.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

SECTION OF SURGERY.

A MEETING of this Section was held on Dec. 16th, 1927. In the absence of the President, Sir WILLIAM WHEELER took the chair.

Bone Pegs.

Mr. WILLIAM PEARSON, in exhibiting some intramedullary bone pegs of his own design, said that the use of ivory or bone pegs was confined to transverse fractures of the shaft of the long bones, without comminution, in which operative treatment was required. The principle consisted in putting the peg into the intramedullary canal so as to keep the two main fragments in alignment while union was taking place. The advantages which Mr. Pearson claimed for his pegs were that they could easily be altered in size by merely filing off the bone, and that they did little damage to the endosteal tissue. To block the medullary canal with a solid ivory or bone peg would retard the formation of callus round the fractured surfaces; therefore his pegs had a series of longitudinal grooves on the surface, and in the larger sizes small central canals, so that callus would growth both through and round the pegs. This avoided a complete block of the medullary canal. It was not a good thing, he thought, to ream out the medullary canal and endosteal tissue, which was most important for bone-formation. The pegs had no elasticity, and as they were made of inert material the sooner they were absorbed the better. The few cases in which he had used them had done extraordinarily well. They were made in six sizes and were obtainable from Allen and Hanbury.

Mr. HENRY STOKES said that he himself had made some bone pegs, but with difficulty and without much success. Using an ordinary chisel he had got a better result by making them not round but octagonal.

Mr. ARTHUR CHANCE said that he found it tedious and rather difficult to alter the pegs themselves; in his experience it was easier to make the bone fit the peg than the peg fit the bone. He was therefore in favour of reaming out the medullary cavity.

Mr. PEARSON, in reply, said that his bone pegs were only for temporary use; they were simply an internal splint to prevent displacement. He would not use them where there was non-union; in such a case the alternative methods were to do a bone-graft or step-cut operation. The latter was feasible in fractures of the humerus.

Typhoid Infection of the Sternum.

Mr. F. J. HENRY recorded the following case.

A man, aged 62, complained of a lump on the front of the chest, which had appeared about five weeks after he had been discharged from hospital, where he had been treated for typhoid fever. There was a smooth, rounded, painless swelling about the size of a golf ball on the anterior chest wall, involving apparently the second, third, and fourth costal cartilages and the right border of the sternum. It was stony hard and very fixed to the deeper structures. A radiogram (lateral view of chest) showed pronounced thickening of the body of the sternum, with osteosclerosis. Exploratory incision was made and the lump found to consist of a fibro-cartilaginous mass, with a central cavity containing pus, from which a pure culture of *Bacillus typhosus* was isolated. No other residues of typhoid infection could be found in urine, fæces, or specimens of bile removed by the duodenal tube.

The frequency of bone complications in typhoid, said Mr. Henry, was said to be less than 1 per cent. This small incidence seemed strange in view of the probability that the marrow of most of the bones was infected sometime or other in most cases of typhoid.

The CHAIRMAN said that this was an interesting and rare case, illustrating one of the fundamental principles in surgery. He referred to the teaching of Murphy that each infection had its own date for metastasis—e.g., the infection from staphylococci appeared 16–21 days afterwards and that from streptococci seven days afterwards. In typhoid metastasis of the bones occurred from the fourth to fifth week after infection. The fact that each organism and each disease had its own date for metastasis considerably simplified the subject for teaching purposes.

Mr. CHANCE said he had had a case similar to Mr. Henry's. The patient came to him five months after having typhoid fever, with an indolent, inflammatory swelling in the right side of the sternum. A little thickened pus was obtained on incision. The rib cartilage was bare, but there was no evidence of necrosis. Healing occurred in six weeks.

Mr. STOKES quoted two similar cases in his experience. In one there was an abscess in the tibia; in the other an abscess in the back of the scalp. Both had healed up without the slightest difficulty. His experience in these two cases made him incline to the view that it was advantageous to open the bone and scrape it right away.

Mr. HENRY, in reply, said that in a similar case of swelling, occurring four to five weeks after the infection, he would leave it alone. Infections in bones other than the ribs and sternum healed up without much difficulty. The reason for difficulty in this case was that it was extremely hard for the soft parts to collapse into it. If the cavity did not heal up he proposed filling it with a muscle graft from the pectoralis major.

Spinal Caries.

The CHAIRMAN read a communication on the results of the treatment of Pott's disease by conservative treatment and by conservative treatment supplemented by bone-grafting. It was too soon, he said, to know the results of the admirable modern methods of treatment in open-air hospitals, with specially skilled assistants and trained orthopædic nurses. Under the old régime, however, the results following treatment in city hospitals, without special nursing and with inadequate methods of fixation, were far from satisfactory. A review of the figures given by different authorities suggested that very few cases of advanced Pott's caries ever reached old age. Some figures showed that within a period of 12 years 40 per cent. were dead; other authorities gave the percentage of deaths within 15 years at 38·6 and others at 40·5. 75 per cent. of the deaths occurred within the first two years. Fusion operations of the spine had been introduced in 1911 and surgeons of experience generally agreed that the bone-grafting operation was a distinct addition to the armamentarium of the general as well as the orthopædic surgeon. There was no

doubt whatever that both the Hibbs and the Albee operations caused fusion of the laminæ. This had been proved by cases which needed a second operation, by post-mortem examinations, by clinical observation, and to some extent by radiography. Sir William Wheeler urged the necessity of careful and prolonged after-treatment. His own practice was to keep the patients on a Thomas or Jones frame for three months and then to keep them in bed for three months without the frame. For another three months they were allowed to move about carefully wearing a Jones posterior spinal support night and day, and afterwards the spinal support was continued according to the progress made. He had never seen, in an adult, the absorption or disappearance of a bone-graft after introduction. Personally he was against operation in the case of children. He had operated upon several young children about 12 years ago and was satisfied that the method was not justified unless in exceptional cases. A number of surgeons advocated the operation as part of conservative treatment in young children, and had proved conclusively that the introduction of the graft did not interfere with the growth of the child. The presence of an abscess or paraplegia was, in his opinion, a strong indication for the introduction of a graft.

Discussing treatment and prognosis when paraplegia was present, Sir William Wheeler said that in his view laminectomy did more harm then good. Frazer's operation to relieve pressure was designed on sound principles. After referring to the various operations for spinal fusion he gave an account of 30 adult patients treated in the ten-year period 1917–27. Of these six had died; 19 or 20 appeared to be cured.

Mr. FREDERICK GILL said that with a bone-grafting operation the patient was restored to his normal strength in a shorter time than with conservative treatment, and he was able to carry on for a number of years. During the operation he used local as well as general anæsthesia. The skin and spinal muscles were anæsthetised with novocaine and adrenalin, and this, he believed, lessened the shock, reduced the loss of blood to a minimum, and made the operation easier by rendering the field almost bloodless. He used an osteotome or chisel for cutting the graft in preference to the Albee saw, which, he thought, cauterised the bone and was apt to destroy the osteoblastic tissue.

Mr. T. J. D. LANE, Mr. A. B. CLERY, and Mr. CHANCE also spoke and Sir WILLIAM WHEELER replied.

Ununited Fracture.

Mr. WILLIAM DOOLIN showed a man, aged 63 years, who had broken both bones of the forearm 16 years ago. There was a false joint with very poor grip; both pronation and supination were present, but only to a limited extent, and the patient could not lift weights. Owing to his age and extensive sclerosis of the bone-ends Mr. Doolin had decided against operative repair. A celluloid armlet had been made to control the forearm, abolishing the flail movement; and with this the patient's gripping power was definitely improved; he could now lift a chair held out at arm's length.

NORTH OF ENGLAND OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY.

A MEETING of this Society was held in Manchester on Dec. 16th, 1927. An address on the Present Position of Gynæcology was given by Prof. FLETCHER SHAW, the President, who took the chair.

Prof. MILES PHILLIPS (Sheffield) showed a specimen of

Hydrops Tubæ Profluens.

The patient, a 6-para aged 42, complained of attacks of pain in the right lower abdomen, lasting 2 to 7 days at intervals of 3 to 6 weeks. She said that a swelling, about the size of an orange, formed on the right side when the pain was severe, followed by a gush of thin bluish fluid from the vagina when the pain ceased and the swelling disappeared. The same thing occasionally happened on the left side. Nine months after the last confinement, 14 years ago, she had inflammation of the womb and ovaries. Menstruation lasted 2 to 7 days and came on every 24 to 26 days. There had been increased loss during the last 13 years. The patient had a constant greenish-yellow discharge, but no vulvitis. There were indefinite adnexal swellings. At operation a bilateral hydrosalpinx was found, larger on the left side, and the uterus and both appendages were removed. When a piece of silkworm-gut was passed through the uterus into the tubes clear fluid ran out. The cavity of the hydrosalpinges did not communicate with the cystic ovaries.

Prof. ARCHIBALD DONALD said there might be a valve action at the uterine end of the tube. He had never known pus thin enough to escape.—Dr. K. V. BAILEY had seen a patient with a large right hydrosalpinx who had had an intermittent discharge for 18 months—Prof. BLAIR BELL (Liverpool) said that he had noted an intermittent discharge as a rule in malignant disease of the tube.—Dr. J. H. WILLETT (Liverpool) suggested that the rise of tension could sometimes overcome the retention of fluid, and asked if there were any adhesions.—Prof. PHILLIPS, in reply, said there were no adhesions and likened the retention to urinary retention with overflow.

Dr. E. O. CROFT (Leeds) showed a specimen of

Ruptured Isthmial Pregnancy.

The patient was a 2-para aged 40. She had had amenorrhœa for six weeks with prodromal pain for a week or two, and then an acute attack of pain just before admission. On laparotomy the tube was found to be merely attached by the mesosalpinx, having been severed completely from the uterine cornu. The ovum was embedded in the tube just at the junction with the uterus, and when it burst had caused complete detachment of the tube.

The PRESIDENT was surprised to hear of the prodromal pain and asked its cause.—Prof. DONALD thought that the term "burst" was inappropriate. The tube had not been dilated. Rupture was always due to erosion of the tube wall.—Prof. PHILLIPS believed that erosion of the tube took place. He had seen a case in which the hole in the tube was so small that it had been missed at operation and was only found at autopsy.—In reply, Dr. CROFT said that he believed that in most cases of ectopic gestation rupture was due to erosion of the tube wall. The prodromal pain was not severe, and he was unable to account for it.

Dr. CROFT also showed a specimen of

Pseudo-elephantiasis of the Vulva.

A 2-para, aged 22, complained of swelling of the vulva gradually increasing for 12 months and causing inconvenience. The whole vulva was greatly enlarged and thickened, and on the left side a pendulous mass about 5 inches in diameter was hanging from a stalk formed by the labium minus. The Wassermann reaction was negative, and the vulva was completely excised.

Dr. F. H. LACEY said he had seen several cases of pseudo-elephantiasis at a venereal clinic and had cured them with 2 per cent. lactic acid.—Mr. J. E. STACEY (Sheffield) had also seen a number of similar cases, and asked if there was any thickening of the vessels in the specimen to corroborate the theory of a syphilitic ætiology.—Dr. CROFT, in reply, said that no arterio-sclerosis was noted.

Prof. D. DOUGAL read a note on

Three Cases of Hæmatometra Associated with Tuberculosis.

CASE 1.—A woman, aged 37, had been married for seven years. There was primary amenorrhœa till she was 30 and since then a slight loss every five to six weeks. Poor health. As a child she was an in-patient at a children's hospital for a month. The uterus was enlarged to about the size of a four months' pregnancy; the appendages were adherent and panhysterectomy was performed. The uterus had a single cavity containing blood. The left tube was also distended with blood. No communication could be made out between the uterine cavity, the cervical canal, and the right tube. Microscopical examination showed an adenomyomatous condition of the right uterine cornu, and necrotic areas with giant cells.

CASE 2.—Patient, aged 31, married two years. Primary amenorrhœa. "Consumption of the bowels" when a baby. Pain in lower abdomen for ten years. The uterus was enlarged, size of two months' pregnancy, hard and fixed, and there were adhesions in the pelvis. Subtotal hysterec-

tomy with removal of both appendages was performed. The uterus contained two cavities, the larger on the right side and communicating with the right tube, which was closed at its outer end. The left tube was closed except in the interstitial portion, and showed chronic interstitial salpingitis. Microscopically necrotic areas and giant-cells were seen.

CASE 3.—Patient aged 22; single. Primary amenorrhœa. History of phthisis in family. Uterus enlarged and cystic. Had an acute attack of pain while awaiting admission to hospital; treated by appendicectomy. The uterus, removed by subtotal hysterectomy, was asymmetrical, the right half being larger than the left. There were two cavities, the right containing blood and the left containing pus with necrotic material and giant cells.

All three specimens, said Prof. Dougal, showed atresia associated with chronic infection. The question was whether the chronic infection in early life was or was not the cause of maldevelopment. He was inclined to think it was.

Prof. PHILLIPS believed that a condition of obliterative endometritis developed in the region of internal os. He had once reported a hydrometra the size of a seven months' pregnancy due to tuberculosis.

Miss FRANCES IVENS (Liverpool) had had a case of a single woman who developed amenorrhœa after normal menstruation. The uterus reached the umbilicus and was filled with blood. The obstruction was at the external os, and there was no evidence of tubercle. She described another case in which there was caseous material in the cavity. She curetted it away and the patient afterwards menstruated.

Dr. LEITH MURRAY (Liverpool) had had two cases in which he established communication between the hæmatometra and the cervix with a curette.

In reply, Prof. DOUGAL said that none of his specimens showed infection of the lower part of the uterine wall.

MANCHESTER MEDICAL SOCIETY.

AT a meeting of this Society, held on Dec. 7th, 1927, Dr. J. GRAY CLEGG delivered a presidential address on

Ophthalmology in Relation to General Medicine.

The embryology of the eye, he said, is interesting, because it shows a fourfold relation with ectoderm—by the neural ectoderm of the retina, the lens, the conjunctiva, and the skin of the lids. Important structures such as the uveal tract and the cornea are of mesodermic origin. It is not surprising, therefore, that the eye shares with ectodermic and mesodermic organs disturbances of function and nutrition. Again, its anatomical relations, its nerves and blood-vessels, together with the visual pathways, are so complicated that affections of the brain and spinal cord are very apt to set up and produce important signs. Thus, on the one hand, the ophthalmologist must have a wide knowledge of anatomy, physiology, and pathology, and on the other, the physician should be familiar with methods of examining the eye. Every medical man should possess a good lamp, a large lens of 3 inches focal length, a pocket loupe, and an electric ophthalmoscope.

Dr. Clegg went on to describe the signs of retinal arterio-sclerosis and its relation to general arterio-sclerosis. It is recognised, he said, by the "copper-wire" appearance in the early stage, and by the "silver-wire" appearance when the lumen has become completely occluded. Serious cerebral results follow in about 45 per cent. of the cases in which this condition has developed. Amaurosis fugax may result from temporary spastic occlusion of the retinal arteries, but if the blood stream is long stagnant, thrombosis sets in and the result is coagulation-necrosis of the retina. Many cases formerly regarded as embolism of the central retinal artery or one of its branches are really due to this cause. Thrombosis of the retinal vein brings about rapid loss of sight, is evidenced by extensive hæmorrhages, and is often complicated by a secondary glaucoma. The appearances of renal retinitis, said Dr. Clegg, are characteristic, but not pathognomonic; it occurs in one-third to half the cases affected by contracted kidney. In chronic parenchymatous nephritis, the retina is usually unaffected. When renal retinitis is present the blood pressure is almost always high. The condition may occur at any age, whereas arterio-sclerotic retinitis is a disease of old age. Very few cases survive for two years after renal retinitis is discovered, whereas patients with arterio-sclerotic changes may live much longer. In renal cases both eyes are usually affected, but in nearly half the cases of arterio-sclerosis the signs are unilateral. Papill-œdema may occur as the only ocular sign in renal disease, and then differential diagnosis from a cerebral tumour may be difficult; the blood pressure is a distinct guide. It is believed that there are two outstanding factors producing different types of renal retinitis—viz., toxic and vascular—and that in parenchymatous nephritis the toxic element prevails, whereas in the small red kidney the vascular is the more important. There is reason to suppose, Dr. Clegg continued, that the retinitis of diabetes is really due to the disease and not to the concomitant renal condition. Diabetes also affects the pars retinæ iridis, and Harrison Butler states that he has diagnosed diabetes from an œdematous condition of the mamelons, the brown knobs at the pupillary margin of the iris. The lens may become opaque, and there may be rapid changes in its refractive index; in fact, if a form of progressive myopia is noted in an elderly person diabetes is almost always the cause of it. The central scotoma for colour in cases of diabetes, he considers, may really be an effect on the ganglion cells of the macular region, as in tobacco amblyopia.

BRIGHTON AND SUSSEX MEDICO-CHIRURGICAL SOCIETY.

AT a meeting of this Society held on Jan. 5th Dr. DONALD HALL, the President, took the chair and Mr. G. W. BERESFORD read a paper on

Gastric Ulcer.

The treatment of duodenal ulcer by gastro-jejunostomy was, he said, more or less generally accepted. Gastric ulceration was a more serious disease, and the treatment presented a difficult problem. The most important contributory causes were unsuitable and irritating foods; perhaps the increased consumption of sugar, leading to gastritis; mental over-exertion and worry, causing an upset in the innervation of the stomach; and focal infection from the teeth or intestinal tract. Acute ulceration was less common than it had been 10 or 12 years ago. The tendency was towards early healing and treatment should be entirely medical; even severe hæmorrhage was not an indication for surgical intervention. Chronic gastric ulcers were generally situated along the lesser curve, probably because of the lymphoid follicles in this region. The main symptoms were periodicity of attacks of epigastric pain and vomiting, coming on one, two, or three hours after food. Radiography was the only certain means of diagnosis. Hæmatemesis was not usual, but was of serious import. Bulmer's recent figures [1] showed that the mortality from hæmatemesis was very high. Medical treatment should be given in all cases except where there was a suspicion of carcinoma, where a course of such treatment had already failed, where there had been an attack of hæmatemesis, or in the presence of perforation or mechanical deformity of pylorus or stomach. In these exceptional cases surgical treatment was to be adopted. Medical treatment should consist of Sippy's diet with a suitable period of rest in bed. The aim of surgical treatment was to remove the chronic infection of the stomach wall and to eliminate free HCl. Gastro-jejunostomy, together with excision or cauterisation of the ulcer, should be adopted for non-adherent ulcers, whilst large and fixed ulcers should be treated by subtotal gastrectomy.

[1] THE LANCET, 1927, ii., 168.

Reviews and Notices of Books.

ANTITUBERCULOSIS VACCINATION.

La vaccination préventive contre la tuberculose par le "B. C. G." By A. CALMETTE, Sub-Director of the Pasteur Institute. With the collaboration of C. GUÉRIN, A. BOQUET, and L. NÈGRE. Paris: Masson et Cie. 1927. Pp. 250. Fr.22.

IN this book Prof. Calmette has brought together the main details of the publications which he and his collaborators have made from time to time in scientific journals, notably the Annals of the Pasteur Institute, dealing with prophylactic vaccination against the tubercle bacillus. These papers cover a long period, and it is no small advantage to have the material, which has hitherto been scattered over many journals, brought together in this way. Of the four parts into which the book is divided, the first is devoted to a summary of the various experiments on antituberculosis vaccination made since the discovery of the bacillus, a good deal of which is reprinted verbatim from Calmette's book on Bacillary Infection. The second part is concerned with the researches made upon cattle, especially young calves, and of the tests made in collaboration with Dr. R. Wilbert on the protection of apes in the tropics by means of prophylactic vaccination. This work is already well known. The third part is a record of laboratory work, cultural, immunological, and histological, with the bovine strain of tubercle bacillus known as B.C.G., first isolated in 1906, and repeatedly subcultured for 13 years on a special medium of glycerinated ox-bile until its virulence was reduced to the point of safety for inoculation work with living cultures. This part of the work is the crux of the whole inquiry. The fourth and last part summarises the results of prophylactic injections of B.C.G. vaccines given to infants since 1921, including the statistics (published in the Annals) for the Seine Inférieur which are the best documented. Most of this work has already been reviewed in our columns during the last two years.[1] The book closes with the reproduction of a set of model forms used in the statistical inquiry work with prophylactic vaccination of infants in France. There is also a serviceable bibliography, but, as too usual in French scientific books, no subject index.

THROAT, NOSE AND EAR.

Diseases of the Throat, Nose and Ear. Second edition. By DAN MCKENZIE, M.D., F.R.C.S.E., Surgeon to the Central London Throat and Ear Hospital. London: William Heinemann (Medical Books), Ltd. 1927. Pp. 677. 45*s.*

THE second edition of this book, which appears seven years after the first, has been very considerably enlarged, and maintains the high standard set by the original work. It is one of the class of large text-books which deals with laryngology and otology in a full and complete manner. It will be valuable to the young specialist wishing to complete his knowledge of these subjects, and useful as a work of reference both to the established oto-laryngologist and to the general practitioner. The general plan of the book remains unaltered in the new edition, but numerous additions have been made. Among these are a series of pictures after Laurens illustrating the operation of laryngectomy; it is perhaps to be regretted that the Glück type of operation, from above downwards, is not described, for it has made considerable headway in this country and possesses several advantages. The limits of laryngology are difficult to define, but it seems inadvisable to discuss goitre in a work of this kind, at any rate unless diseases of the thyroid gland are fully described; we are glad to see that the description and illustrations of the operation of thyroidectomy have been omitted from this edition. The short article on cleft-palate is inadequate, and might equally well have been left out; on the other hand, the final chapter on the lymphatic glands of the neck, with hints on dissections in this region, will be most useful to the laryngologist. The book is well and profusely illustrated, and may be cordially recommended.

[1] THE LANCET, 1926, i., 1030, 1046; and 1927, i., 936.

Handbook of Diseases of the Nose, Throat and Ear. For Students and Practitioners. Second edition. By W. G. SYME, M.D., F.R.F.P. & S. G., F.R.S.E., Surgeon for Diseases of the Throat and Nose, Western Infirmary, Glasgow, and to the Ear, Nose and Throat Hospital, Glasgow. Edinburgh: E. and S. Livingstone. 1927. Pp. 396. 12*s.* 6*d.*

THIS little book has been written primarily for students in the hope of stimulating their interest in the specialty. As Dr. Syme says, students are apt to look upon diseases of the nose, throat and ear as of little importance for the passing of examinations, and it is only when they start practice that they realise how often affections of these regions will engage their attention. Dr. Syme's book will doubtless fulfil its purpose, for it is well written in an interesting manner; the matter is presented on sound lines, and the recommendations on treatment are sensible. In a future edition the author might well consider the advisability of adding more illustrations of pathological conditions, especially in the nose and throat, for pictures are of great assistance to the young practitioner in recognising lesions.

Diseases of the Nose, Throat and Ear. For Practitioners and Students. Second edition. Edited by A. LOGAN TURNER, M.D., LL.D., F.R.C.S.E., Consulting Surgeon, Ear and Throat Department, Royal Infirmary, Edinburgh. Bristol: John Wright and Sons, Ltd. 1927. Pp. 440. 20*s.*

THE history of this text-book is of interest. It has been evolved from a much smaller text-book written by Dr. W. G. Porter in 1912, a second edition of which was revised and published by Dr. P. McBride during the author's absence on active service. Dr., then Major, Porter, D.S.O., was killed in action in 1917, and his friends and colleagues in Edinburgh, headed by Dr. Logan Turner, revised a third edition as a labour of love and a tribute to his memory. This was perpetuated in a larger work published, under the editorship of Dr. Logan Turner, in 1924, which has now reached a second edition. The section on diseases of the nose is under the joint authorship of Dr. Logan Turner and Mr. W. T. Gardiner, the former being responsible also for that on the paranasal sinuses. Mr. Douglas Guthrie deals with the pharynx and nasopharynx, Mr. J. D. Lithgow with the larynx, Mr. G. E. Martin with endoscopy, and Mr. J. S. Fraser with diseases of the ear. The work is an important one, and gives an admirably clear and concise account of diseases of the specialty. Since it is written primarily for students and practitioners, methods of examination are carefully detailed, but the larger operations are not fully described. The numerous excellent illustrations add to the value of the book.

Practical Guide to Diseases of the Throat, Nose and Ear. For Senior Students and Junior Practitioners. Fifth edition. By WILLIAM LAMB, M.D., C.M. Edin., M.R.C.P. Lond., Consulting Surgeon, Birmingham Ear and Throat Hospital. Revised by FREDERICK W. SYDENHAM, M.D., C.M. Edin., F.R.C.S.E., D.P.H. Vict., Honorary Surgeon, Birmingham Ear and Throat Hospital. London: Baillière, Tindall and Cox. 1927. Pp. 450. 12*s.* 6*d.*

THE arrangement of this little book is somewhat unusual; the method has been to devote a chapter

to examination of a region, such as the nose, followed by a chapter on its treatment. The mouth and pharynx are thus dealt with, and then in turn the nose, the larynx, and the ear. A disadvantage of this method is that a series of diseases is described in one chapter and the treatment appropriate to each discussed in another; this leads to confusion and overlapping occurs which would be avoided with a simpler arrangement. A paragraph on congenital laryngeal stridor on p. 253 appears to have become mixed up with a description of tracheotomy, which latter has no beginning and does not appear in the index. The concluding chapter is devoted to Dr. Sydenham's experiments on radiography of the skull, with 29 skiagraphs, mostly of dry specimens; this chapter would form a monograph on some aspects of the technique of radiography, but is out of place in a short guide to oto-laryngology. In spite of these defects the book contains a good deal of useful information and much sound advice.

ACTINOTHERAPY.

Ultra-violet Rays in the Treatment and Cure of Disease. Third edition. By PERCY HALL, M.R.C.S. Eng. London: William Heinemann (Medical Books), Ltd. 1927. Pp. 236. 12*s.* 6*d.*

THERE is still a widespread impression that treatment by ultra-violet light is a simple and harmless proceeding, and much ignorance as to which of the various forms of lamp now on the market do actually give off ultra-violet rays. Dr. Hall's book, which passed rapidly through two editions in 1924–25, was published with the definite object of combating erroneous views. The present edition has been largely rewritten and has greatly increased in size. In its present form it should be useful to the many doctors who are taking up this form of therapy. Curiously enough, however, one of the main questions upon which they might reasonably look for some information—namely, dosage—here receives but scanty attention. The author is content simply to say (p. 127): "Each patient is a law unto himself, and every case requires careful individual consideration, and must be judged on its own merits. This is the only safe and scientific method of estimating dosage in actinotherapy." But this statement is not very helpful to anyone seeking information on how to measure the yield of radiation from the source he is using or what doses are generally suitable in certain varieties of disease. Dr. Hall states that results are occasionally gained by the use of the tungsten arc, which cannot be achieved with other types of lamp, a fact which he ascribes to the richness in quality and quantity of its emanations (we must ask, in passing, is radiation an emanation?), and he suggests that the tungsten spectrum includes wave-lengths whose presence cannot be detected by any modern spectroscope or other instrument. He is led to assume that the ultra-violet rays of the fifth octave are not less, but more, penetrating than those of the first octave. In making such assumptions as these he seems to overlook the vacuum spectrometer as an instrument of precision.

BASAL METABOLISM.

Basal Metabolism in Health and Disease. Second edition. By EUGENE F. DUBOIS, M.D., Medical Director, Russell Sage Institute of Pathology; Associate Professor of Medicine, Cornell University Medical College. London: Baillière, Tindall and Cox. 1927. Pp. 431. 22*s.* 6*d.*

THE estimation of basal metabolism has become of increasing importance during the last few years, both in research and in practical medicine. Dr. Dubois, the second edition of whose book has been revised and brought up to date, approaches the subject in a manner interesting both to clinician and physiologist. The first part deals with normal metabolism. With regard to the choice of apparatus, the author points out that many types are accurate and efficient, and errors lie more often in the operator than in the apparatus. Every worker must attain complete mastery of his own instrument, and be aware of its sources of error; this implies that he must study a large number of normal individuals before investigating the abnormal. The Benedict unit, Zuntz-Geppert apparatus, Tissot spirometer, and Douglas bag, in experienced hands, give identical results, which in turn agree with those obtained in a respiration calorimeter. In this edition the chapter on the estimation of the surface area of the body has been rewritten, and the results obtained by different methods are compared. The influence of age, growth, and diet on normal metabolisms are also discussed. The difficulties in the selection of normal standards for comparison are great; every piece of work involves the study, with exactly the same technique, of a large number of normal controls in order to ascertain directly the correct standards for the given conditions.

The second part of the book deals with basal metabolism in disease and contains chapters on undernutrition, obesity, disease of the thyroid and ductless glands, cardiac and renal disease, fever, nervous diseases, and water metabolism. To the clinician the chapter on thyroid diseases is of most interest, for here basal metabolism tests have the greatest practical value. In discussing their reliability the author points out that although such tests form the best available measure of activity in the thyroid gland, they must not be accepted blindly. For example, emaciation and inanition in hyperthyroidism may counteract a raised metabolism and make it appear normal. In spite of such difficulties, basal metabolism tests are shown to be of great value, especially in estimating progress before and after operation or during iodine or other treatment. Throughout the book frequent references are made to original work in sufficient detail to enable the reader to weigh evidence himself and form his own conclusions on controversial points.

The book is well indexed and illustrated, and supplies a full and valuable summary of our present knowledge of basal metabolism.

Le métabolisme basal. Les applications en clinique. Par CLAUDE GAUTIER, Médecin des Hôpitaux de Paris; et RENÉ WOLFF, Chef de Laboratoire adjoint à la Faculté de Médecine de Paris. Paris: Gaston Doin et Cie. 1928. Pp. 172. Fr.15.

THIS little book deals with the subject of metabolism from the point of view of the clinician and discusses the practical value of basal metabolism tests in diagnosis and prognosis. The first and larger part deals with metabolism in health; this part includes an outline of the principles of the production and conservation of animal heat and the effects of muscular work and digestive processes on heat production. The constancy of the minimal heat production in the same and different normal subjects is discussed, with the allowance to be made for variations in weight, height, age, and sex. Details of laboratory technique are not given, but the principles of direct and indirect calorimetry are outlined. A short chapter is devoted to the effects of drugs on basal metabolism in normal people. The second part deals with metabolism in disease. The authors consider the basal metabolism test is of greatest practical value in diseases of the endocrine organs and especially of the thyroid gland. In these it is very useful in mild cases of hyperthyroidism and hypothyroidism when clinical evidence is insufficient. It is valuable in estimating the course of these conditions so that treatment can be more accurately regulated. In the diagnosis of certain disorders of the pituitary gland, the genital glands, and in diabetes mellitus the test also finds a place. The book concludes with a bibliography of the more important literature on the subject. For the clinician it forms a useful introduction to the modern studies of basal metabolism.

ABDOMINAL SURGERY.

Surgical Diseases of the Gall-bladder, Liver and Pancreas, and their Treatment. By MOSES BEHREND, A.M., M.D., F.A.C.S., Attending Surgeon to the Jewish and Mount Sinai and Northern Liberties Hospitals; Instructor in Anatomy, Jefferson Medical College. Philadelphia: F. A. Davis Company. 1927. Pp. 278. $4.

OF this small book 117 pages are devoted to the anatomy and physiology of the liver and pancreas. There follows a chapter upon pathology. Neither in this chapter, nor in the rest of the book, is any new light thrown upon the subject, nor is the work which has been done in the past systematically reviewed. The author emphasises his own custom of removing the gall-bladder only after exposing to view the structures in the right margin of the gastro-hepatic omentum, but is unfair to the majority of surgeons (at least English and European ones) when he states, p. 176, "The operation of cholecystectomy is almost invariably performed by most surgeons within the gastro-hepatic omentum by the so-called 'closed' method," and "little cognizance of the proper method of removal of the gall-bladder" (meaning dissection of the cystic and bile-ducts as the first step) "has been taken." There are no statistics of the author's own results (though some interesting case-histories are told) and many omissions. The accounts of the experience of other surgeons are inadequate.

NOTES ON CLINICAL LABORATORY METHODS.

By the Standing Committee on Laboratory Methods of the University of Glasgow. John Smith and Son (Glasgow), Ltd. 1927. Pp. 66. 2*s*.

THIS book represents the result of the labours of a committee appointed by the University of Glasgow to secure uniformity in the laboratory methods used in the clinical teaching in the department of medicine of the University. The field covered is equivalent to side room testing as usually carried out by students of medicine. In addition, much useful information is included as to the correct method for the collection and transmission of specimens requiring somewhat more elaborate methods of investigation than those included in the book. The book is well suited to its purpose, and will also prove useful to medical men who wish to perform for themselves the simpler methods of laboratory investigations.

PHYSICAL DIAGNOSIS.

Ninth edition, revised and enlarged. By RICHARD E. CABOT, M.D., Professor of Medicine in Harvard University; formerly Chief of the West Medical Service at the Massachusetts General Hospital. London: Baillière, Tindall and Cox. 1927. Pp. 536. 25*s*.

As an aid to diagnosis in practice this book is valuable, because the author has only included technique which he himself has tested by long trial and found reliable enough to recommend to others. Useful methods of examination are thus not obscured by others which, though they have long since fallen into disrepute, still lumber up the pages of many otherwise trustworthy books. Many time-worn but useless diagnostic "signs" are not even mentioned. Of Kernig's sign the author says: "This reflex is of some value in the diagnosis of meningitis, though allowance must be made for the stiffness of old age. The sign is by no means pathognomonic, but is of some confirmatory value." Such a statement puts the test in its proper place. The proportionate value to be placed on positive and negative findings is stressed throughout the book. Methods of examination of the central nervous system are only dealt with briefly. The exact localisation of lesions is not attempted, the reader being referred to larger works on the subject. The sections on tuberculosis, the blood, and cardiovascular disease have been revised. Reference numbers are included to the Gamble-Cabot cardiac diagnosis records, a set of phonographic records taken of normal heart sounds, the third heart sound, and various types of murmur and irregularity. The illustrations are clear, and these by themselves are of value in diagnosis.

This new edition should be welcomed by students and physicians.

CHEMISTRY OF FAMILIAR THINGS.

Fifth edition, revised and enlarged. By SAMUEL SCHMUCKER SADTLER. London and Philadelphia: J. B. Lippincott Company. 1927. Pp. 336. $3.

THIS is a useful book, for its main object—namely, to point out how many of the things which the average person sees about him are really a demonstration of chemistry—is well carried out. We have here, in fact, a synopsis of the most important recent developments related to chemistry as that science enters daily life, and the unscientific reader is thus enabled to obtain the sort of accurate knowledge which should enable him to understand the forces involved in phenomena with whose externals he is perfectly familiar. The subjects dealt with, after a brief outline of the divisions under which the workings of chemistry manifest themselves, include light and heat, air and water, various metals, soil, food, and the application of chemistry to the several arts and manufactures. The book is already widely appreciated, as its regular reissue testifies, and a chapter entitled Chemistry since the War brings it up to date.

THE EARLIER INHABITANTS OF LONDON.

By Prof. F. G. PARSONS, F.R.C.S., F.S.A. London: Cecil Palmer. 1927. Pp. 240. 10*s*. 6*d*.

THIS book is a delightful combination of osteology, archæology, and history, and for Londoners in particular it will have great attractions. It is the result of many years' work on the physical anthropology of the inhabitants of this island, and the author wisely warns us that the historian should understand clearly how little as well as how much help he may expect from anthropology in its present state. According to Prof. Parsons, there has been no continuous occupation of London since the days of the old Stone Age, the present contours of gravel and river drift having been deposited since that date, while he points to the geological estimate that the twin hills which form the site of the city rose for the first time from the river bed about 3000 B.C. At this date probably the surrounding country, densely afforested, was largely occupied by a race which had migrated slowly westward along both shores of the Mediterranean, occupying the various peninsulars, and getting as far as Great Britain by turning up through Spain. The London history of paleolithic and neolithic man is set out mainly in terms of the skeletons and especially the skulls found in the "long barrows"—the earliest method of sepulture—and the next irruption from the continent appears to have occurred a thousand years later. The origin of this is unknown, but the migrants were tall and round-headed, and their influence upon the population is thought to have been slight. On the arrival of the Nordics, however, about 600 B.C., real and obvious changes were produced in the racial make-up, owing in particular to the difference in pigmentation and the well-shaped nose of the Nordic race. While a gradual evolution was thus taking place among the earlier inhabitants of our islands, London for practical purposes was not existent. It did not start as a city until after the Roman invasion, and has no record until it became a suitable port for the city of Verulam, which stood a few miles from St. Albans. From this point onwards the reader is on more familiar ground and will enjoy Prof. Parsons's epitome of what may be learned from nature and physical anthropology concerning the characteristics of the various races which lived around the site of London before any settlement was effected, as of those who were the first inhabitants.

THE LANCET.

LONDON: SATURDAY, JANUARY 14, 1928.

THE TREATMENT OF THE MALARIAS.

QUININE has certain disadvantages. It is expensive, it has a bitter taste, large doses are often required, and it does not at once remove from the cutaneous circulation the gametocytes which infect anopheles. Hence has arisen a search for substitutes, of which plasmochin is a recent example. More than a year has elapsed since the first full reports on this synthetic drug were published by MÜHLENS and his collaborators,[1] and enough observations have accumulated to draw some fairly sure conclusions about its uses and dangers. That both exist cannot be doubted. Even in the original communication [1] SIOLI reported that cyanosis and jaundice sometimes appeared if the daily dose of 0·08 g. (taken in three-day courses, with three-day intervals, for two to three weeks) was raised to more than 0·1 g. Indeed, one man who took 0·08 g. daily for eight days developed hepatic pain, ashen cyanosis, collapse on exertion, and chocolate-coloured blood, methæmoglobinæmia and methæmoglobinuria both being present. MÜHLENS, who laid chief stress on the drug's destructive action on crescents, at that time dismissed cyanosis, occurring with daily doses of less than 1·0 g., as an unpleasant vasomotor and neuropathic effect. That the cyanosis of plasmochin-administration is due to methæmoglobinæmia was, however, demonstrated spectroscopically by MANSON-BAHR before the Royal Society of Tropical Medicine and Hygiene last year. FISCHER and WEISE,[2] examining the blood of 26 patients receiving 0·05 to 0·1 g. daily, found methæmoglobinæmia in 25, the percentage ranging from 4 to 20. Percentages of more than 4 were found in 10 out of 13 cases on a daily dose of 0·03 g., but were deemed harmless; the higher percentage occurred on a dose of 0·1 g., cyanosis being so great that quinine had to be substituted for plasmochin. Nevertheless, MÜHLENS, although he now admits that plasmochin causes methæmoglobinæmia, still holds that with a daily dose of 0·01 g. per 10 kg. of body-weight (or 0·07 g. for a man of ordinary size) there is no more risk with this drug than with quinine or salvarsan. This view cannot be accepted. EISELSBERG [3] reports upon a medical man receiving this dosage (10 tablets, or 0·2 g. in about three days) who collapsed with methæmoglobinæmia, fever, vomiting, and great hepatic tenderness. He had an enlarged spleen, the red corpuscles were reduced to 1,550,000 per c.mm., the serum was tinged with bilirubin, and his life was only saved by blood transfusion.

If, as seems necessary, the dosage of plasmochin must for safety be reduced to 0·03 g. daily in accordance with the experience of SIOLI and EISELSBERG and the work of FISCHER and WEISE, the results obtained by those who have used higher doses must be disregarded. And they comprise almost the whole experience with the drug. FISCHER and WEISE, however, have reported on the effects of the smaller doses and found that so far from causing the disappearance from the cutaneous blood of schizonts of subtertian malaria, the plasmochin acted rather as a provocative; they describe multiplication of subtertian rings and precipitation of an acute attack, so that recourse to quinine was needed to cut it short. With the reduced dosage it was noted that crescents disappeared from the cutaneous circulation always within 10 and usually within five or six days. Unfortunately, however, the action of plasmochin on crescents cannot be depended on. Their disappearance may be merely temporary, and BÄRMANN and SMITS[4] report that under four plasmochin tablets (0·08 g.) daily they have followed a case in which crescents actually appeared for the first time in the cutaneous blood after administration of the drug had continued for five days. It may be mentioned that the figures illustrating the degeneration of crescents after exhibition of plasmochin obtained by MANSON-BAHR [5] followed daily doses two to four times as large as those which the observations we have quoted seem to permit for the future. On both sides of the Atlantic there have been deaths which it is unreasonable not to attribute to plasmochin, and the conclusion seems inevitable that results obtained with the dosage advised and in general use must be discounted, and that the whole matter must be reinvestigated, using the quantities which FISCHER and WEISE suggest. In weighing the evidence one further source of error should also be borne in mind. Plasmochin is issued in tablets of two kinds: first those containing merely 0·02 g. of plasmochin, and secondly those containing 0·01 g. of plasmochin plus 0·125 g. of quinine, known as plasmochin-compound. In reports on the effect of plasmochin-compound—and they are numerous—too little stress may be laid on the fact that the man who is taking the advised dose of 0·08 g. of plasmochin is also taking, anonymously, grs. 15 of quinine.

These and other investigations, although suggestive, do not permit the conclusion that any known drug is capable of replacing the crystallisable alkaloids of cinchona in the treatment of malaria. Stovarsol, for example, is without effect on the quartan and subtertian forms, and cannot be relied on to banish even the tertian parasite more than temporarily. It is not to be expected, either, that these new drugs will lower the cost of malarial treatment—a matter of extreme importance to the many millions of impoverished persons implicated. How, then, can this cheapening be brought about? The present position appears to be as follows. There is no shortage of cinchona-bark or of quinine as bark, but not enough quinine is being extracted in Java to meet the world demand, of which Java supplies about nine-tenths; there is merely a shortage of quinine at a price which would make it available for general tropical use. Only in Java have the quinine-rich species of tree flourished under cultivation; the high quinine-content of these trees is a result of careful selection, and so long as quinine is used in malaria to the exclusion of the other crystallisable cinchona alkaloids, so long must this state of affairs continue, unless the varieties of cinchona which are rich in quinine can be cultivated in their natural home, South America. As DOMÍNQUEZ [6] urges, from the Argentine, this must surely be merely a matter of trial. It is now established, however, that quinine holds no antimalarial pre-eminence among the crystallisable cinchona alkaloids, and it is well known that the hardy *Cinchona succirubra*, which can be fairly widely cultivated, produces a reasonably high general alkaloidal, although a relatively low quinine content. The mixed alkaloids have been issued for many years in India and the Federated Malay States under the

[1] Beiheft zu Arch. für Schiffs- und Trop.-Hyg., 1926, xxx., 305.
[2] Deut. Med. Woch., 1927, liii., 1380 and 1421.
[3] Wien. klin. Woch., 1927, xl., 525.
[4] Geneesk. Tijdschr. van Nederl.-Indië, 1927, lxvii., 151.
[5] THE LANCET, Jan. 7th, p. 25.
[6] Boll. del Inst. Clin. Quir., 1927, iii., Paludismo.

name cinchona-febrifuge, and the only real difficulty in connexion with this remedy has been to devise some practical standard of purity, each batch varying in composition, and human nature being what it often is. Steps to safeguard users appear to be reaching a practical end in Malaya and Madras. They will be watched with sympathy and interest, and when this problem is solved, as surely it must be, there will be justification for cultivating the hardier cinchonas on a wide enough scale to meet the demands of our humanity.

PROBLEMS OF CEREBELLAR FUNCTION.

ONE of the topics set for discussion at the meeting last summer of the American Neurological Association and the Neurological Section of the Royal Society of Medicine was concerned with cerebellar functions, and the contributions then made by both American and English speakers have been published in a recent issue of *Brain*. Seeing that such communications have been based in some instances on original experimental work, while others can fairly be regarded as summarising what is known of the subject, and all, of course, were "up to date," the general reader may naturally and properly turn to them for the latest information on this highly controversial question. That discussions on cerebellar function have often been perversely successful in arousing controversy can scarcely be denied—a sure sign of continuing failure to solve the problem in a way commending itself to those whose opinions deserve respect. The cerebellum is a large organ anatomically, and is connected with the rest of the neuraxis by numerous tracts, entering and leaving, whose courses have been traced definitely enough. Its cortex is histologically complex yet remarkably uniform, in this respect contrasting materially with that of the cerebral hemispheres; the latter can be mapped out into 40 or 50 areas differing from each other morphologically in greater or less degree. This fact of itself can be taken justifiably to indicate relatively simple—in the sense of unitary or at least mainly undifferentiated—function for the organ. Its physiology has been studied by hosts of experimenters along the accepted lines of excitation and destruction, without, however, the attainment of finality. Stimulation of the cerebellar cortex, and of its enclosed nuclei, has in some hands resulted in the appearance of movements, on the whole of a rather tonic as opposed to phasic type. The late Sir VICTOR HORSLEY was one of those entirely convinced of the genuineness of experimental excitation of movements from the cerebellum, and at the Congress referred to above Dr. A. MUSSON substantiated the contention as the result of elaborate experiments of his own. Doubtless the matter of the interpretation of such motor phenomena requires attention. Because a given fibre-system or ganglionic collection is electrically excitable into action rendered visible by movement of the animal operated on, it does not follow this is its sole function in the intact animal; it may form but a part of its normal function, or, alternatively, it may represent only a share taken in the function of an anatomically larger and more complex system which normally acts as a whole. The method of destruction of given regions of the cerebellar cortex, or of its nuclei, or of extirpation of half or the whole of the organ, serves usefully to enable anatomical connexions to be studied by degeneration technique, but in regard to function it is essentially a negative procedure; for what the experimentalist does is in reality to study what functions are left. How unsatisfactory such a method can become scarcely needs emphasising. Thus while excitation supplies comparatively little direct evidence of cerebellar function, extirpation or destruction forms as it were an inverted approach to the problem.

Since the earlier researches of Sir CHARLES SHERRINGTON there has developed an increasing tendency on the part of some neurophysiologists to utilise spinal, decerebrate, or thalamic animals for the determination and analysis of specific functions referable to one or other part or system of such of the "preparation" as is left. That is to say, to investigate spinal functions the spinal cord is isolated; for mesencephalo-cerebello-ponto-spinal functions the animal is decerebrated, and so on. The procedure has been carried to its limits in the fine work of the late Prof. R. MAGNUS and his collaborators, and has been instrumental in enabling them to fix the functions of mechanisms concerned in equilibration and posture, and individualise the parts played by organs such as the labyrinths, otoliths, eyes, and neck in maintenance of the erect position. In some respects, nevertheless, decerebrate technique can be misleading, especially if conclusions derived therefrom are applied to intact organisms without due attention to results obtained by other methods. Up to a quite recent period cerebellar function was thought to consist largely in the regulation of muscle tonus and the coördination of (unconscious) tonic or postural motor activities. Now the decerebrate "preparation," consisting of lower midbrain, cerebellum, pons, medulla and cord exhibits in a striking form all the phenomena of reflex postural action and integrity of muscle tone as well, but a conclusion reached by several experimenters (now of an older generation) that the cerebellum is not essential for these reactions has been amply corroborated by the researches of Drs. L. J. POLLOCK and L. DAVIS, reported at the Congress. They have demonstrated that the influence of that organ on the reflex activities of the decerebrate animal is practically nil; if anything, it rather inhibits these than otherwise. These results appear to suggest that the functions just mentioned will have to be discarded from the totality ascribed to that organ. Yet in point of fact the question of their interpretation is left untouched. How far are they applicable to the intact animal, and to man?

This aspect of the general problem remains to be examined, but it cannot be said we have as yet evolved comprehensive principles for guidance. We do know that integration of diverse functions must take place constantly at different physiological levels, whatever the individual parts responsible for portions of them. The large size of the cerebellum, its prominence, its development throughout the animal kingdom, and its relative architectonic uniformity, are such as to render probable the attribution to it of an ordinary, essential, universal function, a function that neither is subtle nor requires much differentiation; and as no line of evidence, clinical or experimental, points to this belonging to the order of sensation, by exclusion and for other obvious reasons we can take it to be of the motor series. At this stage resort to the conclusions derived from the accumulation of clinico-pathological data, over a very long period indeed, justifies the assertion that a part, possibly the major part, of cerebellar activity in the normal person is concerned with the function of coördination of movement, but not with its innervation. In other words, the rôle is subsidiary to that of the cerebral cortex, so that when it is diseased substitutive action in respect of the cerebrum is to some extent realised. At the same

time, it is incomplete. The methods of the clinician lead him to argue that defect of cerebellar function is exteriorised by defect of coördination or of timing, so that while movement-innervation remains ataxia accompanies it. At present the indications are that the interrelation of cerebrum and cerebellum is more intimate, less readily severed but more revealing when this occurs, than that of cerebellum and other prespinal but postmesencephalic mechanisms. Should this view receive further support, then we may be prepared to find in cerebrum and cerebellum a physiological couple, from the standpoint of motility, concerned more with phasic than with static activity. The latter of the two will be linked more to the new than to the old motor system.

Some may be led impatiently to express dissatisfaction with present-day attainments in regard to knowledge of cerebellar function. That many obscurities remain after periodic assertions of a confident character concerning it seems regrettable. Yet the explanation is comparatively simple. The complexities of the problem have been too often neglected in the desire to obtain a cerebellar formulation of clinical worth. Progress is slow, and always outstripped by hypothesis and speculation, but abandonment of views that can no longer be sustained is in reality a sign of its existence.

THE OPTICAL PRACTITIONERS BILL.

THE Report of the Committee on the Optical Practitioners Bill, a summary of which appeared in our last issue, gives no support to the hopes of that large number of opticians who desire to obtain a definite status as State-sanctioned prescribers of spectacles. The Report fully recognises the prima facie reasonableness of their claim on the assumption that such work can be efficiently performed without the possession of a medical training. The increased demand for optical treatment has led bodies such as the Spectacle Makers Company and the British Optical Association to raise the standard of optical practice, and there is no need to question the good work done by many well-qualified opticians in this connexion. On the other hand, says the Report, it has brought into existence a considerable number of practitioners, the reality of whose qualification does not always correspond to the high-sounding titles which they assume. If so is it not right, the supporters of the Bill ask, that a State register should be set up so that those opticians who are qualified in this dubious way should be easily distinguishable by the public from well-trained men? It is important that the public should realise the grounds on which, in spite of the above considerations, the committee have decisively rejected the claim to registration as inadmissible in the interests of the public. In the first place, it would be impracticable to omit from the proposed register the names of those opticians who, though without special qualification, have been conducting bona fide sight-testing businesses for years. If a register is to be set up at all it would involve the admission of practically all existing opticians. A stronger objection to the proposal is that in many cases defective vision is merely a symptom of disease either of the eye itself or manifesting itself in the eye, and in some cases where vision may be brought up to normal there may still be evidence in the eye of disease which might pass undetected by anyone not trained in the same way as the ophthalmic surgeon is trained. The contention of the medical profession has always been that the prescription of glasses is a part of the medical treatment of the eyes, and no one should attempt to do it who has not had a complete medical training, as well as a special training in ophthalmology. The optician contends that he is trained by special courses at a "refraction hospital" to examine the fundus of the eye sufficiently to distinguish a normal from an abnormal fundus, and that all cases coming under the latter category would be referred by him to an ophthalmic surgeon. In this connexion we may remark that it is by no means so easy to distinguish a normal from an abnormal fundus as some would suppose. Opaque nerve-fibres, for instance, present such a striking picture that not even a tyro could miss it. Yet it has absolutely no pathological significance. On the other hand, slight changes at the macula are of grave importance, but may be so difficult to detect that in some cases few ophthalmic surgeons would care to pronounce an opinion as to their nature without the employment of a mydriatic. This matter of drugs is a further complication. There is a real danger in their use, a fact which is recognised by the opticians. The Spectacle Makers Company, for instance, have for many years exacted as a condition of granting their diploma an undertaking against the use of drugs in any form. Yet a considerable proportion of refraction cases are complicated by conditions of the lids calling for the use of remedies other than or in addition to suitable glasses. For purposes of refraction alone drugs are often essential, especially in the case of children. The dangers of the local use of atropine by any but skilled hands are well known.

The plea of the opticians that there are not enough ophthalmic surgeons to do the work is duly considered in the Report, the opinion being expressed that the demand will create the supply, and is, in fact, creating it. The present system, by which some 800 ophthalmic surgeons, or practitioners with a special knowledge of the eye, have undertaken to see insured patients in their consulting-rooms for a one-guinea fee, is working well as far as those societies are concerned who allow their members to have the benefit of it. Many societies, however, still refer their members to prescribing opticians, presumably in order to save the surgeon's fee. From the society's point of view this is an economy, but from the patient's point of view the economy may often be a false one. What he asks for is the best advice that he can possibly get. We know that the average hospital patient is exceedingly particular about the appearance of his or her spectacles, and is often willing to pay considerably more than a guinea for appearance alone. The same, we believe, is true of the average panel patient. If these people understand that an attempt is being made to put them off with a form of treatment which is not the best attainable they will not be satisfied. At least they should have a chance of supplementing the "optical benefit" allowed by their societies out of their own pockets if the benefit does not suffice to pay the fee. This question of fee appears to have given some trouble to the committee. The subject of clinics is hinted at in their Report, but we are by no means sure that this is a desirable way of getting over the difficulty. It is not suggested, we understand, that clinics should be established in which the surgeon's fee per patient should be less than half a guinea. If he is to do a complete refraction for this fee, together with a thorough examination of the eyes, would he not expect that premises, apparatus, lighting, and clerical assistance should be provided for him just as they are at a hospital, and, if so, how much would the saving amount to? Moreover, in our view it is essential that the principle of free choice of specialist for the patient should be maintained, and it is hard to see how any scheme of clinics could be reconciled with it. We do not say that a scheme of clinics staffed by ophthalmic specialists such as the British Medical Association has recently been discussing is to be absolutely rejected, but we believe that with the existence of ophthalmic hospitals offering free treatment for the poor on the one hand, and the guinea fee scheme for insured patients on the other, the scope of its utility must be limited.

What, then, is to become of the prescribing optician? The Report assumes that numbers of the population will resort to opticians in the future as they have done in the past, and they opine that even without a register a healthy competition between medical men and opticians may raise the standard in both classes of practice. They further suggest that these two sets of practitioners might act in collaboration in refraction work, presumably at clinics, but as long as there is rivalry between the two classes closer collaboration will be difficult than that which takes place when each has a defined task—the medical man prescribing glasses, the optician making them. The advances in the skill of the dispensing optician of late years have been marked. He is faced with such problems as the production of light lenses of a high power, the best forms of bifocal glasses, and the decentering necessary when prisms are prescribed. The amount of technical attainment which these things demand is great. There is at present no demand for the State registration of dispensing opticians, pledged not to prescribe. If it should come there would be no opposition to it on the part of the medical profession.

THE LONDON FLOODS.

HUNTING for scapegoats will not bring back to life the victims of the recent London floods, but something must be done to fix responsibility. The Government departments concerned include, it seems, the Ministries of Health and Agriculture, the Office of Works and the Board of Trade, and the public will be particularly interested to know what measure of coördination existed. Already the Thames Conservancy, which has no jurisdiction below Teddington, has officially laid the blame upon the lower river, the flood water from the upper Thames being apparently negligible. The Port of London Authority will doubtless return the compliment. These two bodies between them know what volume of water passes up and down. The Board of Trade, which issues such admirable advice as to coastal weather, is presumably aware if high seas are running at the mouth of the Thames. The river police cannot be entirely ignorant of the state of the tides. The metropolitan borough officials have means of knowing what areas lie below the threatened levels. If all these bodies agree that the recent flooding was inevitable, what measures were taken to warn and evacuate the occupiers of endangered premises? Even the Victoria Embankment is not an inviolable institution; its engineers may have thought that they built with a margin of absolute safety, yet the Thames surmounted it for a distance of over 100 yards near the Temple Station in 1921. Many buildings which have suffered were erected before the embankment was made; others—for example, the basements of the Tate Gallery—have been erected on plans submitted and passed in quite recent years. The practice of allowing human beings to sleep in underground rooms close to the river level receives striking condemnation. There will be many issues to be examined at whatever form of public inquiry is set up. Meanwhile the coroners' inquests may elicit information, and especially as to the condition of any weak spots in riverside retaining walls. Under the 1925 Act a single inquest can be held where deaths "appear to have been caused by the same accident or occurrence," although the bodies lie in different coroners' jurisdictions. This course has rightly not been taken in respect of the victims of the flood; each locality ought to have the fullest opportunity of producing its own evidence before its own tribunal, which best knows the local conditions.

ROYAL MICROSCOPICAL SOCIETY.—The annual meeting of this society will be held on Wednesday, Jan. 18th, at 7.45 P.M., at 20, Hanover-square, London, W. 1. At 8 P.M. Dr. James A. Murray, F.R.S., will deliver the Presidential Address on Staining and Structure.

Annotations.

"Ne quid nimis."

THE FATE OF MENTALLY DEFECTIVE CHILDREN.

DURING the last quarter of a century over 4000 Birmingham children have been pupils at special schools for mental defectives, and a remarkable survey of their after-history has now been issued.[1] Of 4052 whose career was investigated, 239 are dead; 564 have been lost sight of; 1618 are doing remunerative work, their average wage being 25*s.* 6*d* a week; 18 are soldiers; 174 were transferred to ordinary elementary schools; 34 were transferred to other schools, mainly industrial or schools for the deaf; 405 are at institutions for the mentally defective, including 36 in asylums; 156 are in other institutions, chiefly those of the poor-law; 269 were dismissed from their special schools on account of physical or mental disability; 536 are at home and said to be useful there; and 39 are at home and said to be useless. Excluding those who died or are untraced, these children may be tentatively assigned to three main groups:—

1. Those who seem to be socially efficient and self-supporting to a reasonable degree. Among these may be placed the 1618 paid workers and the 18 soldiers. It also seems reasonable to include the 174 children transferred to elementary schools, together with some—say 20—of those who were sent on to other special schools, and perhaps half of the 536 who are described as "useful at home." This makes a total of 2098.

2. Those suited for institutional care, including the 405 in institutions for mental defectives, the 156 in other institutions, the 269 dismissed as incapable from special schools, and the 39 useless at home. In this group the total would be 869.

3. Those that might be left at home under supervision, although socially inefficient. This would include the remaining half of those who are "useful at home" and the remaining 14 of those transferred to special schools, and gives a total of 282.

Thus of the 3249 cases definitely ascertained 2098 (64 per cent.) are presumably satisfactory; 869 (26 per cent.) are only suitable for institutional care; and 282 (9 per cent.) belong to the intermediate class and might remain at home under supervision. These figures reflect credit on the training provided in these special schools and on the measures of after-care.

The above grouping is not suggested by the Birmingham After-care Subcommittee and some comments and qualifications are necessary. Of the 1618 children doing remunerative work a few are earning wages that would not by any means support them, and it is surprising to find that only 12 are engaged in bootwork and 14 in woodwork which are the main handicrafts taught in the special schools. The better children, it appears, are allowed to leave at the age of 14, and probably the results would be more satisfactory if the later years were devoted to elementary vocational training. In Group 2 there are 156 persons in institutions other than those for the mentally defective, besides 36 in asylums; it would be decidedly better if all these defectives were in the institutions provided specially for them. As regards Group 3 it would be an advantage if as many as possible of the defectives living at home could attend occupation centres; at present the number who do so is only 35. It would, of course, involve some trouble and expenditure on the establishment of more centres and the provision of guides, but (as the report states) "the benefits to the child and the home are very great, and the centres provide excellent means of supervision and elementary training for certain children who would otherwise need institutional care."

The after-history of the defectives themselves is not the only thing that has been studied, and the report

[1] Report of the Birmingham After-care Subcommittee, issued from the Offices of the Education Committee, Birmingham.

contains notes on the condition of 156 children, of 5 years and upwards, born to parents one of whom is mentally defective. In this series 146 appear to be normal, 7 are in schools or colonies for the mentally defective, and 3 are in some other way abnormal. Thus at least 7 out of 156 (nearly 4½ per cent.) are mentally defective, and probably this figure should be higher—i.e., in greater excess of the 1 per cent. that might be expected from normal parentage. The numbers are small and not all the children have reached the age when ascertainment is compulsory or indeed can be depended upon. The Committee makes the tentative suggestion that when the father is the defective most of the children are female, and vice versa; but in the groups given the sex of the children is not always stated. The further suggestion that the deficiency of the parent emerges more on the opposite sex also remains to be proved. In the meantime investigations of this kind are of great interest.

PULSE-WAVE VELOCITY.

IMPAIRMENT of arterial elasticity has long been recognised as playing an important part in the production of circulatory insufficiency, but no satisfactory clinical method has been introduced for accurate quantitative measurement of the impairment in particular cases. Palpation of the superficial vessels, or inspection of the retinal arteries with the ophthalmoscope, will generally reveal advanced structural changes; but this information is merely qualitative. For a quantitative estimate of arterial elasticity one must have recourse to an indirect method, based on observations of the velocity of transmission of the pulse-wave; and before the results can be applied to the study of disease, it is necessary to determine the limits of accuracy of these observations and the range of normal variation. This has been attempted recently by Dr. Otto Beyerholm.[1] He found that the average pulse-wave velocity in persons between the ages of 15 and 60 was just over 7 metres per second, readings above 8 or below 6 metres being exceptional. Amongst children and older people the number of observations was too small to yield reliable figures, though a general tendency of pulse-wave velocity to vary with age was noted. He points out that even in a uniform sample of material, composed of subjects of the same age and sex, individual readings may vary by as much as 2 metres per second, whereas readings differing by more than 1 metre may be obtained from the same subject at different times. These values are very similar to those previously recorded by Bramwell, Hill and McSwiney.[2] They and their collaborators made a further series of observations on the relation of arterial elasticity to diastolic blood pressure, both in excised human arteries and in the living subject, and their conclusions may be summarised by saying that the extensibility of the arterial wall depends on two factors—(1) the structure of the vessel, and (2) the diastolic blood pressure. Even in the absence of any morbid changes in the vessel wall a high diastolic pressure may be instrumental in producing impairment of the functional efficiency of the arteries, which can be recognised by an unduly high reading of pulse-wave velocity.

In considering the clinical value of pulse-wave velocity as an index of arterial insufficiency, there are various points which have to be taken into account. In the first place, in the investigations mentioned, only one particular segment of the arterial system has been considered, and it may not be justifiable to regard the arteries of the upper limb as a fair sample. How far do pathological changes in this situation imply similar changes in other parts of the body? Disease affecting the limb arteries would be relatively unimportant provided the cerebral and coronary arteries were healthy. Again, the readings obtained give only the mean velocity in the vessels of the upper limb, whereas stiffening of the aorta and its great elastic branches may lead to very different results from similar changes affecting the smaller and more muscular arteries. Lastly, in any test of functional efficiency it is necessary to consider the degree of impairment which may exist without becoming manifest. It is well known, for example, that the slighter degrees of renal insufficiency are not associated with any rise in the blood-urea, and in the same way it is necessary to ascertain to what extent the arterial walls may lose their elasticity without producing a rise in pulse-wave velocity sufficient to be recognised as pathological. Further investigations are needed in order to answer these questions, and to render available for clinical purposes a test which promises to be useful in diagnosis.

[1] Acta Medica Scandinavica, 1927, lxvii., 203.
[2] Heart, 1923, x., 233.

ANTENATAL WORK AT A SCOTTISH MATERNITY.

THE medical report of the Glasgow Royal Maternity and Women's Hospital for the year 1926 is arranged in accordance with the standard scheme for unification of maternity hospital reports, suggested by a committee of the Royal Society of Medicine. The intrinsic value of this report is evident seeing that the hospital deals annually with nearly 8000 patients, not including the antenatal and postnatal dispensaries. Its value is further increased by the comparison of the results of treatment in the case of patients who have received antenatal care, of those who have had no antenatal examination, and of the frank emergencies. Information on these lines is difficult to obtain, and is much needed at the present time, when the extension of antenatal treatment depends so largely on a recognition of its value.

The report opens with a numerical summary of presentations. There were 42 breech and transverse presentations among 1387 cases (2·4 per cent.) which had had antenatal care and 21 among 538 cases (3·9 per cent.) which had not. It is apparent from these figures that version had been performed on a considerable number of breech presentations in the antenatal department; the tables of maternal and fœtal mortalities given on pages 16–17 justify an extension of this procedure, for a maternal mortality of 3·6 per cent., and a fœtal mortality of 27 per cent., are above the average mortality-rates for this presentation. Pelvic contraction was treated by induction of labour in three cases, by Cæsarean section in 108, and by craniotomy in 19. Of cases under antenatal supervision labour was induced in eight such cases (there is a discrepancy in these figures referred to in the report), Cæsarean section performed in 74, and craniotomy in five. The fœtal mortality in 83 cases of spontaneous labour was 7·2 per cent. These figures clearly contrast the treatment of pelvic contraction in Glasgow and London. The most interesting tables in the report are those dealing with the treatment of antepartum hæmorrhage. Taking the 86 cases of placenta prævia, there was no maternal death and a 50 per cent. fœtal death-rate among 11 antenatal cases, contrasting with the emergency cases (66 cases) in which the maternal mortality was 9 per cent. and the fœtal 87 per cent. These figures well illustrate the value of antenatal work even in such a condition as unavoidable hæmorrhage; but they still contrast with those of accidental hæmorrhage in which the maternal death-rate was only 1·7 per cent. and the fœtal 50 per cent. Conservative treatment was the method of election, Cæsarean section being rarely performed for antepartum hæmorrhage. The report deals fully with toxæmic pregnancy. The maternal mortality in 72 cases of eclampsia was 15 per cent., about one-quarter lower than the average figure for all hospitals, and again Cæsarean section was the exception. The fœtal mortality-rate is not given though the information is available for calculating it. The morbidity-rate (B.M.A. standard) for the whole hospital is 10·6 per cent., for the emergency cases 13·9 per cent., and for

the antenatal cases only 8·6 per cent., further evidence of the value of antenatal work, although the figures are a little higher than might have been anticipated. The summary of fatal cases includes five of rupture of the uterus, three of which died of peritonitis, and two apparently of shock; there is no record of recovery from this accident.

Hospital reports if properly compiled have real value to those engaged in similar work. This report has been carefully put together and is a credit to the registrar.

EDUCATION OF THE DEAF.

AN address was recently delivered by Mr. Sibley Haycock, superintendent of the Langside School for the Deaf, Glasgow, to the Scoto-Irish Branch of the National College of Teachers of the Deaf, Dumb, and Blind, Belfast, and his words contained information of particular interest to the medical profession. To all of us it is perfectly well known that our large deaf population is practically wasted for civic and social purposes almost solely because of want of education. The majority of these people are quite able to discharge competently most of the duties of a citizen, and this would become obvious at once to the public if the barrier which their defect erects between them and the hearing population were not so lamentably maintained. There are only 16 residential schools for deaf children in this country and Scotland, and only 450 qualified teachers, all of whom are still badly paid, though this position is at last receiving attention, Government recognition having brought with it financial aid. The services of Dr. Eichholz, chief of the medical department of the Board of Education, have been immensely valuable in the attempts of what is still a small body of enthusiasts to meet the situation, for his general understanding of the capacities of the deaf child, gained by personal inspection of all kinds of schools, has helped to a better understanding of the problems before us. Mr. Haycock, in his address, set out many of these things in detail, concluding with a practical explanation of the special nature of the work of teachers of the deaf. Here he laid stress on the fact that the psychology to be dealt with is that of the normal child, but normal only up to a certain point, as so much of the instruction that is gained by hearing is lost to the deaf subject in his silent world. The deprivation of mental reactions must retard the development of the deaf-born child unless real communication is quickly established between him and the hearing world. The only way in which this connexion can be brought about is through lip-reading, and the elaborate course of instruction required should commence in babyhood. Mr. Haycock says: "If a deaf child is to be given the best chance of having the severe handicap of his deafness minimised to the fullest possible extent; that is, if he is to have the best chance of learning to speak and of understanding the speeches of others, his education, of necessity, must start early, and, school conditions being satisfactory, the earlier the better." There must be common agreement with this statement, which forms a serious reflection upon us all when we remember how small is the effort as yet to supply the special teaching required, and when we hesitate to say that this teaching is as thorough as it has been in the past.

EXPERIMENTS WITH B.C.G.

SOME time ago Calmette suggested that immunity against tuberculosis might be developed by the introduction into the body of living tubercle bacilli which had been rendered avirulent by prolonged growth under abnormal conditions. This suggestion is academically irreproachable and conforms to the traditional Pasteurian method of vaccination. The strain of tubercle bacilli which he produced is known, in current laboratory slang, as B.C.G. (Bilié-Calmette-Guérin). Its use is avowedly not without risks, and Calmette proposed that it should be employed primarily for the protection of infants whose parents had active tuberculosis and whose expectation of life would ordinarily be bad. Basing his technique on a belief in the overwhelming importance of the alimentary tract as the initial port of entry of the tubercle bacillus, he has treated many such children with oral doses of the vaccine, and claims that the results are excellent. He considers that the bacilli, although no longer virulent, largely retain their antigenic powers, and therefore evoke antituberculous immunity. This opinion is supported by some experiments on guinea-pigs recently reported[1] by Japanese investigators. In the first experiment a number of the animals were given an intravenous injection of B.C.G., and were later tested for their reaction to tuberculin as well as their response to subsequent inoculations with virulent tubercle bacilli. Both tests indicated that a certain degree of immunity was definitely established, and although in these inoculated animals infection could still be induced with large doses, it progressed more slowly in them, and with a greater tendency to heal, than it did in control animals. The second series of experiments more closely reproduced the clinical circumstances envisaged by Calmette. Guinea-pigs were given intragastric doses of the vaccine preparation, and a month later these were followed by a known effective dose of bacilli of a virulent strain. In untreated animals the effect of the virulent organisms was to produce a tuberculosis of the abdominal glands, most pronounced, at the time of examination, in those of the subpyloric group. In the vast majority of the treated animals, examination three weeks after the virulent organisms had been ingested revealed no enlargement or other alteration of these glands; in a few cases an enlargement described as "inflammatory" in nature was noted; only very exceptionally were any changes found suggestive of actual tuberculosis. The sum of these experiments is to support the thesis that a definite immunity can be produced by B.C.G. It would be useful to have further information about the possibility of lesions developing at a later stage than the period which they cover and about the effect of the treatment on the ultimate survival of the animals.

A review of Prof. Calmette's new book on preventive vaccination with B.C.G. will be found on p. 84 of our present issue.

MENSTRUATION AND THYROID FUNCTION.

THE close relationship between thyroid and ovarian function has long been recognised, but the laws governing it are still obscure. In this field, as in many others, little is gained by studying the normal; enlightenment is more likely to come from observing the reproductive abnormalities of patients suffering from thyroid disease. The evidence yielded by such observations has been valuable but hard to comprehend. Exophthalmic goitre, for instance, may be associated with either amenorrhœa or menorrhagia—an apparent contradiction also seen in myxœdema, which stands at the opposite end of the scale of thyroid disorder. As a result of their investigations of 300 cases of thyroid disease,[2] Dr. H. Gardiner-Hill and Dr. J. Forest Smith deduce two principles: (1) that when menstruation is affected by a given thyroid fault the alteration tends to be in a uniform direction; and (2) that the weaker the thyroid the greater the flow. The series included nine cretins, 100 cases of adolescent goitre with varying degrees of thyroid disturbance, 96 of exophthalmic goitre and hyperthyroidism, 41 of myxœdema, 24 of parenchymatous goitre, and 22 of simple adenoma of the thyroid. The cretins' behaviour confirmed the findings of previous authorities;

[1] Annales de l'Institut Pasteur, 1927, vol. xli. Essais d'immunisation avec le B.C.G. Calmette Guérin, by Prof. M. D. Arao Imamura and Dr. Michihiko Takashashi.—Sur l'immunité des cobayes vis-à-vis de l'infection entérale par le bacille tuberculeux humain après, administration intragastrique de B.C.G. Calmette Guérin, by Dr. Kiyoshi Satake.

[2] Jour. Obst. and Gyn., 1927, xxxiv., 701.

menstruation was very late in spite of thyroid medication, but once started was normal and regular. Of the adolescent goitres 79 per cent. seemed to be of the colloid variety, with varying degrees of thyroid function, and 16 per cent. were ordinary cases of exophthalmic goitre. The basal metabolic rate was over +10 per cent. in all the latter, and in general the B.M.R. figures agreed very closely with the clinical grouping. In 63 per cent., however, of those colloid goitres in which hypofunction was diagnosed clinically, the B.M.R. was more or less normal, a fact which provides interesting confirmation of the view that many such goitres are compensatory enlargements. Menstruation was regular and normal in about half the patients with colloid goitre, whatever the state of the thyroid, and in most of tne remainder it varied inversely with the thyroid's activity, amenorrhœa being associated with hyperthyroidism and menorrhagia with hypothyroidism. The exophthalmic patients with their high B.M.R. mostly complained of amenorrhœa.

The group of adult exophthalmic and hyperthyroid patients gave similar results; 57 per cent. of those with definite primary Graves's disease had delayed or irregular periods, whilst 42 per cent. menstruated normally. Of those with less thyroid enlargement and no definite ocular signs only 27 per cent. had scanty menstruation, whilst 65 per cent. were normal. A section of this work suggests an interesting explanation of the apparent anomaly of amenorrhœa and menorrhagia both being reported as symptoms of myxœdema. Dr. Gardiner-Hill and Dr. Forest Smith notice that when myxœdema develops before the menopause it is often accompanied by menorrhagia, and rarely by amenorrhœa. In several of their cases, however, it was preceded by a natural menopause, and they suggest that this kind of occurrence accounts for the impression that myxœdema causes amenorrhœa. The effect of the disease on the œstral functions can only be estimated, they consider, by taking into account whether it occurs before a natural menopause, after a natural menopause, or after a premature one. If before the menopause they find that the usual reaction is menorrhagia; two-thirds of their patients fall into this group. In the remaining third menstruation had been regular until the menopause, and myxœdema had developed a considerable time after it. Three patients who had had a premature menopause showed signs of the disease so long afterwards as to make it very unlikely that the cessation of menstruation was due to the thyroid disturbance.

Of the patients with parenchymatous goitre, 79 per cent. had normal and regular periods and the remainder tended to menorrhagia; none had amenorrhœa. In the large majority, however, there was no gross disturbance of thyroid function. Similarly, 83 per cent. of patients with adenomata of the thyroid menstruated regularly, and the remainder were divided between amenorrhœa and menorrhagia. The few patients in both groups whose thyroid activity was subnormal suffered from menorrhagia. This is consistent with the two general conclusions which Dr. Gardiner-Hill and Dr. Forest Smith have drawn, and their conclusions will undoubtedly be of great assistance in the explanation of menstrual abnormalities in which there has hitherto seemed to be neither rhyme nor reason.

THE CORRELATION OF PHYSICAL AND MENTAL EXCELLENCE.

THE adage about sane minds and healthy bodies is more often quoted as an exhortation than a statement of fact, but a series of investigations carried out at the Manchester Grammar School by Dr. A. A. Mumford go far to show that it is indeed true that the successful scholar is in most cases the successful athlete, or, at least, the owner of a well-developed body. Dr. Mumford, it seems, is ready to glean in any field for straws which will show the way of the wind, and he has made use of such diverse sources of information as Sir Arthur Keith's "Mechanism of Respiration in Man," the aphorisms of a tailor's cutter, and the measurements of mediæval brasses and suits of armour. The tables finally produced are a modification of those devised by Mr. Cecil Hawkins in 1905, a functional element being introduced by adding the tests for air-pilots constructed by Group-Captain Martin Flack, of the Royal Air Force Medical Service.

At Manchester Grammar School Dr. Mumford has arranged that every boy's record card should have space for annual measurements of height, weight, and the girth of the chest and upper and lower arm, together with general estimates of work and character by the high master and of health by the medical officer, and statements on place in class, method, and time spent on travel, and other points seeming to be relevant. The boys were watched in gymnasium, swimming-bath, and playing-fields, and every effort was made to ascertain individual needs and capacities. Describing his conclusions recently to the Royal Anthropological Institute Dr. Mumford showed how his careful study had confirmed many "common-sense" opinions. The words "physical fitness," he maintains, nowadays have the same kind of soporific effect on human judgment as the term "salvation" had a hundred years ago. As a certificate of security fitness is valueless unless some definite object is in view. A school medical officer must not only study and measure the physical capacity of his pupils; he must also study their adaptability and their preparedness for a wider and equally strenuous future, when they will be under no watchful supervision. It is possible, Dr. Mumford claims, to predict from the shape and movements of the chest of a boy of 12 the directions in which he is most likely to be successful, and to advise the particular form of exercise calculated to make good his deficiencies. The swimmer, the boxer, the long-distance runner, and the student each have their own way of breathing, which can be recorded on a drum. Physical measurements, he considers, are related to mental activity and to the capacity to withstand and recover from mental strain in school life. "Without properly conducted and periodically reviewed systematic measurements of physical and mental growth considered in relation to one another," he says, "it is impossible to judge the effect of mental concentration either on the boy's present growth or his future fitness for civic life. Classwork in school calls for activity of the same bodily organs and to some extent the same tissues as does physical exercise, though in a different way and to a different degree." To confirm this belief in the inter-relation of the two elements he studied a series of 285 boys who had gained entrance scholarships at Oxford or Cambridge during the last 20 years. These boys were found to display a somewhat accelerated physical growth when compared with the average, and they had a slightly better physical frame and fuller breathing capacity. The greater acceleration in growth of chest-girth was more marked among those who took first-class honours at the University than among the seconds and thirds. There was evidence that men in the latter groups used up in study some of the energy which might otherwise have been available for physical development. The average chance of exhibiting physical excellence at school—by gaining school colours and sports awards—was one in ten, but one in every three of the scholarship boys had secured some mark of prowess. Moreover, the greater the degree of mental excellence the greater was the physical excellence. One boy in four in the first-class group, one boy in five in the second-class group, and one boy in nine in the third-class group had been awarded colours. Dr. Mumford's conclusion is that the study of the adaptability of the human frame to meet the demands of the various forms of mental and bodily work required in modern civilisation should be one of the principal objects of the modern school medical officer.

A SWISS TOUR.

PROFIT and pleasure were happily blended in the visit paid to sanatoria and other institutions in Switzerland during the last fortnight of the year by a party of medical men and women, some 70 in number, who took the opportunity of arrangements made by the Council of the Royal Institute of Public Health with the coöperation of Sir Henry Lunn. The first halt occurred at Zurich, where an instructive visit was paid to Dr. R. Scherb's orthopædic clinic known as Balgrist. Here there are 140 beds for the treatment and functional re-education of children with dystrophies and deformities of all kinds, and a special ward devoted to poliomyelitis demonstrates the possibility of muscular recovery even after the expiry of a year from the primary infection. Dr. Scherb gave a convincing demonstration of the fact that physiological movements alone do not avail to cure the deformity of established scoliosis. As is usual in Switzerland a large proportion of the operations are done under local anæsthesia, a method of particular utility to the orthopædic surgeon who has to make the most of what muscular and nervous mechanism is available. Attached to the clinic is a school with primary, secondary, and infant departments under municipal control, and a technical section in which various trades are taught to the older patients in collaboration with local trade-unions. A visit was also paid to the Zurich skin hospital which rejoices in an almost complete collection of life-sized coloured wax models of skin lesions. Having reached the Grisons the party went straight up the admirable electric railway, claimed to be the steepest adhesion line in the world, to Arosa where Dr. Amrein showed them the lavish equipment of the Altein Sanatorium. Davos, with its many public utility services, was the next objective, beginning with the controlled dairy where elaborate precautions are taken to ensure the purity of the milk and the institution which formerly bore the name of Queen Alexandra, but has now become a popular sanatorium for the Canton of Thurgau. In the evening a reception was given to the visitors by the Davos Medical Society, over which Dr. Biland presides. The party was put in touch with the extensive research on climate in relation to human physiology which is being carried out in the valley under the (temporary) direction of Dr. Lindholm, official meteorologist to the Swedish Government. A clinical lecture given in Davos is reported on another page. Proceeding along the Albula railway to the Engadine, the visitors were received at St. Moritz by Dr. Bernhard, the pioneer of sunlight treatment, and were then driven past the frozen lakes to Maloja at the head of the valley, where the week-end was frankly spent in the pursuit of winter sport. The convenient route to Western Switzerland was then taken, down the Bergell and via Milan and the Simplon tunnel to Sierre, from which Montana was reached by the two-stage funicular railway, and the party was entertained at the Palace Sanatorium, now the only English sanatorium in Switzerland for pulmonary cases. Here Dr. A. J. Morland gave them some account of his clinical experience with sanocrysin. Later they were shown over the newly-built Moubra Sanatorium, planned by M. Heer on the latest and most approved lines for the treatment of surgical tuberculosis. Patients at the Palace Sanatorium who require such surgical treatment as phrenic exairesis or thoracoplasty are transferred temporarily to Moubra for this purpose. The last objective of the tour was Leysin where Dr. Rollier entertained the party with a lantern lecture on the therapeutic and social value of heliotherapy, and an admirable demonstration followed of the technique of treatment and of the various forms of occupational therapy, ending with a film exhibiting the "school in the sun" with a demonstration of some actual classes. A special train conveyed the visitors to the graded institutions of the Société Climatérique, including the Sanatorium Grand-Hotel under Dr. Jaquerod. The organisation and planning of the tour left nothing to be desired, and the party returned with pleasant memories of the hospitality received.

ALCOHOL AND THE HUMAN BODY.

TRADITION and enthusiasm have surrounded the whole subject of the action of alcohol with a mist of fiction. It is interesting, therefore, for the general observer to hear an impartial summary of the present scientific position from so wise an authority as Prof. Hugh MacLean, of St. Thomas's Hospital. In a paper on Alcohol and Alcoholism in relation to Problems of Nutrition and Health, read before the Society for the Study of Inebriety, on Tuesday last, Jan. 10th, Prof. MacLean put first the question: Is alcohol a food? Even this, he said, cannot yet be answered with absolute certainty, in spite of a great deal of experimental work. A foodstuff may be defined as fuel that can be used by the body as a source of energy. Protein alone can help to repair the animal organism; fats and carbohydrates can only supply energy. Alcohol, therefore, lacking the essential nitrogenous element of a protein, can never repair tissue waste. As a source of fuel-supply, alcohol will give seven calories for every gramme oxidised, whereas starch will give four calories and fat nine calories. Unlike other foodstuffs, alcohol requires no digestion, and 50 per cent. of it is absorbed directly from the stomach, whence it is very rapidly and evenly distributed over all the soft tissues, even penetrating the bones to some extent. Only 5 per cent. of a moderate dose is excreted by the usual channels, 95 per cent. disappearing by oxidation in the body. The work of Atwater and Benedict in America showed that alcohol is rather more efficiently oxidised than ordinary foodstuffs, that it can replace fat, starch or protein as a source of energy, and that, after a small temporary loss, the body protein is spared. When the amount of work to be undertaken is small, alcohol appears to be just as good as other forms of food, but it fails when a heavy task lies before the body or when a high degree of discrimination or correlation is demanded. There is some evidence, said Prof. MacLean, that the mechanism of the muscles for oxidising alcohol is different from that for oxidising fat and sugar, for in some conditions the latter may be lost and the former retained. In diabetes, a disease which he has studied closely, the patient can sometimes obtain nourishment, within limits, from alcohol when fat and sugar fail him. The idea that more work can be done if alcohol is taken in addition to a normal diet is beloved of the working man, but Prof. MacLean declared it to be a myth. Nevertheless, reviewing the experimental evidence, he concluded that alcohol is a food, but that there is no reason why it should be substituted for ordinary food under ordinary conditions of health. In disease, however, a patient may be unable to take or to digest ordinary food, but may be able to obtain for a short time from alcohol sufficient calories to keep him alive. The body can oxidise 8 c.cm. of alcohol in an hour, therefore under exceptional circumstances the administration of eight ounces of brandy in the day may produce 700 or more calories, and make all the difference between life and death. The undoubted stimulation of the ferment-producing power of the stomach made alcohol, in his opinion, a useful addition to the diet of elderly people and others in whom the secretion is feeble, and the psychological effect may make all the difference between distaste for and good digestion of a meal. Apart from this, however, the continued secretion of gastric juice after the stomach was empty could only be harmful, particularly in ulceration or sthenic dyspepsias. On the intestines, said Prof. MacLean, alcohol has no action, nor does a moderate amount affect the kidneys; its supposed action as a cardiac stimulant is entirely due to indirect action, probably on the mucosæ of the tongue and stomach. On the

liver falls the brunt of absorption, and therefore of chronic alcoholism, and it is the liver that prescribers of alcohol must remember when they consider its dangers. Dr. Alex. Cawadias, in the subsequent discussion, described experiments of his own which had impressed on him the selective action of alcohol on the liver and the peculiar sensitiveness of this organ to the drug. Alcohol is a food, he said, but at the same time it destroys the gland that metabolises food, and disturbs the metabolism of proteins. This incomplete metabolism of proteins, according to Dr. Cawadias, is the cause of many allergic symptoms, vague nutritional disturbances often classed as "neuroses." Prof. MacLean believed that alcohol contributes to fatty degeneration, and Sir William Willcox described the rare acute case which was so sudden and so severe as to be taken for arsenical poisoning. In moderate regular drinkers, too, glycosuria is not uncommon, and ceases as soon as the consumption of alcohol is reduced.

THE British Empire Cancer Campaign is arranging an International Convention on Cancer Research to be held in London next July. Sir John Bland-Sutton, who is the vice-chairman of the Campaign, will preside over the Convention, and sections will be devoted to Pathology, Diagnosis, Medical Treatment, Surgical Treatment, Radiological Treatment, and Public Health and Statistics. The following have been appointed chairmen of sections: Pathology, Prof. W. S. Lazarus-Barlow; Diagnosis, Sir Thomas Horder; Surgical Treatment, Sir Charles Gordon-Watson; Radiological Treatment, Prof. Sidney Russ, D.Sc.; Public Health and Statistics, Dr. F. E. Fremantle, M.P. Sir William Willcox and Dr. Robert Knox will act as vice-chairmen of the Section of Diagnosis and Radiological Treatment respectively. Invitations are being sent, it is stated, to authorities on cancer all over the world, and the universities and medical schools of the United Kingdom will be invited to send delegates. Sir Richard Garton, chairman of the Finance Committee of the British Empire Cancer Campaign, is making a donation towards the expenses of the Convention, and it is intended that no part of the Campaign's funds shall be used to defray them. The Royal Society of Medicine has offered its premises for the meetings, and the Duke and Duchess of York will attend a soirée at which delegates will be received. The chairman of the Convention Committee is Mr. J. P. Lockhart-Mummery.

Sir Thomas Horder has been invited to become a Freeman of Shaftesbury, which is his native town.

INDEX TO "THE LANCET," VOL. II., 1927.

THE Index and Title-page to Vol. II., 1927, which was completed with the issue of Dec. 31st, is now in preparation. A copy will be sent gratis to subscribers on receipt of a post-card addressed to the Manager of THE LANCET, 1, Bedford-street, Strand, W.C. 2. Subscribers who have not already indicated their desire to receive Indexes regularly as published should do so now.

INTERNATIONAL BULLETIN OF MILITARY MEDICINE AND PHARMACY.—At the Fourth International Congress on Military Medicine and Pharmacy held at Warsaw last year, at which 36 delegations from foreign countries were present and over 2000 individual members, it was decided that a permanent link should be established between the medico-military organisations of the different countries by the publication of an International Bulletin. This Bulletin is to appear monthly from Jan. 1st, through the medium of the *Archives Médicales Belges*, and for the moment will only be published in French and English. It will consist of articles of a technical character furnished by the national delegations of each country who will send their work, with the approval of the health services of their respective countries, to the editorial committee of the Bulletin, a body which is appointed by the Permanent Committee of the Congress on which the national delegations are represented. The editor is the secretary of the Permanent Committee, Dr. Voncken, Hôpital Militaire de Liége, Belgium, from whom particulars may be obtained.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CCLVIII.

THE TREATMENT OF TUBERCULOUS EPIDIDYMITIS.

BEFORE considering the treatment of tuberculosis as it affects the testicular apparatus it is essential to appreciate the cardinal features of its onset and course. The age-incidence is from puberty onwards; tuberculosis of the testis is unknown in childhood, apart from generalised miliary tuberculosis, and the majority of cases occur between the ages of 25 and 45, after which time the condition becomes progressively less common. This accords with the period of fullest activity in the testis. It is agreed that the disease attacks the epididymis first, the body of the testis if involved being affected secondarily. Any gross degree of hydrocele is therefore unusual, though a small amount of fluid in the tunica is a common feature. There is general consensus of opinion that the part of the epididymis attacked first as a rule is the globus minor, and the earliest clinical sign is a nodule in this situation. If the disease spreads unchecked the nodule will enlarge, and tend to soften and caseate, becoming adherent to the skin and forming a sinus on the postero-lateral aspect of the scrotum. The rest of the epididymis becomes involved with secondary caseating foci. The testis is destroyed by caseation and fibrosis, but the process being slow testicular sensation remains unaffected for a long time. The vas deferens exhibits nodular thickening, and rectal examination reveals thickening and softening in the vesiculæ seminales or prostate. Later the testis of the opposite side becomes affected, and the bladder may be the seat of tuberculous cystitis. The kidney also may show evidence of infection.

Differential Diagnosis.

Differentiation from such conditions as syphilis or neoplasm of the testis or the acute infections of the testicular apparatus should offer little difficulty. There are, however, certain conditions which give rise to fibrous thickening in the epididymis which must be borne in mind. Fibrosis may follow previous inflammation due to the gonococcus or *Bacillus coli* or damage produced by vascular interference through partial torsion of, or thrombosis in, the spermatic cord. A careful consideration of the history, combined with rectal examination and possibly prostatic massage and urethroscopy, should clear up the diagnosis.

Healing without Operative Interference.

What has been described is the extreme picture of progressive disease; the rate of spread, like that of tuberculosis elsewhere in the body, is, in fact, extremely variable. Thus a nodule may remain indolent in the globus minor for a number of years or breaking down may form a sinus, only to heal up again after discharging for a time. This last is important, as it is not recognised clearly that healing by fibrosis will occur in this particular situation. Although occasionally the whole process is a rapid one, so that an acute form of the disease may be described, the average duration of symptoms before relief is sought is nine months. Quite half the cases exhibit discharging sinuses when they are first seen. The inference to be drawn from the above facts is that, given a high enough resistance on the part of the patient to the tubercle bacillus, and the means of augmenting this are well known, the disease, like tuberculous inflammation occurring elsewhere in the body, has a tendency to natural arrest through healing by fibrosis. This healing process is encouraged by local rest.

Medical treatment, or rather the withholding of surgical treatment, is indicated when a firm nodule in the epididymis is the only evidence of disease. If at any time softening or spread in the epididymis

commence, surgical treatment, as detailed below, is required. In certain of these cases presenting merely a nodule in the epididymis, in spite of the most complete investigation, it is obvious from what has been said above the diagnosis must remain in doubt.

To the surgeon, at any rate, the eradication of the primary focus of the disease in the urogenital tract would seem to be a more rapid and certain procedure. Unfortunately, however, we are still ignorant of the exact site of primary infection in the genito-urinary system. The epididymis may be the primary site, being attacked via the blood stream, or it may be infected via the vas from a primary focus in the prostate or vesicle, as in the commoner disease of gonorrhœal epididymitis. In substantiation of the latter view is the fact that many cases exhibiting early and trivial signs in the epididymis show marked involvement of the vesicle and prostate, and that in many cases of very early and radical removal of the testis, epididymis and vas involvement of the opposite epididymis nevertheless occurs. H. H. Young, in a series of 222 cases of genital tuberculosis, found that in 47 cases the prostate and vesicle were infected by tuberculosis without any lesion in the epididymis. Moreover, the focus is found first in the globus minor or prostatic end of the epididymis, whereas the frankly blood-borne infections of the testicular apparatus, such as mumps and gout, attack the body of the testis primarily.

Surgical Measures.

The forms of surgical treatment appropriate for different types of case include (1) incision and curetting, (2) epididymectomy, (3) orchidectomy, (4) radical removal of the seminal tract.

Incision and curetting.—This may be utilised as a temporary measure where a caseating focus in the scrotum is on the point of ulcerating through the skin. As a rule it will be followed by more radical treatment, although in cases where there is extensive tuberculosis of other organs, such as the lung, it may be injudicious to undertake any further surgical interference.

Epididymectomy.—This operation can be undertaken without fear of endangering the blood-supply of the testis, and should be carried out where the disease has not yet involved this organ. The lower third of the vas deferens should be removed at the same time. Obviously this would be the operation of choice if the epididymis were known to be the primary focus in the genito-urinary tract, but it may be asked whether it has any value if the vesicle and prostate are affected. Even where these organs are involved, primarily or secondarily, however, it is clear that by removing part of the infected tissue, particularly if it happen to be the major part, the recuperative powers of the body are given a better prospect of overcoming the infection. In practice, a vesicular or prostatic lesion often clears up or ameliorates after epididymectomy. Similarly, in the operative removal of a tuberculous joint it is unlikely that all tuberculous tissue is removed, but the results of excision in suitable cases are well known.

Orchidectomy.—This should be reserved strictly for those cases in which the body of the testis is obviously affected. Apart from this it is unjustifiable. A high percentage of cases, in spite of all treatment, sooner or later attack the epididymis on both sides, and to remove the internal secretion of both testis unnecessarily in a man at the prime of life is manifestly unsound practice, and may have serious effects on the mental and general physical health of the patient.

Radical removal of the seminal tract.—This is an extensive and formidable operation. As advocated by Young, it is carried out through a perineal incision. The seminal vesicles and ampullæ are isolated, and the prostate, if infected, is removed also. The epididymes are then exposed in the scrotum, with the patient in the dorsal position, and removed together with the whole remaining portions of the vasa. The risks of the operation consist in the difficulty in dealing with the base of the bladder and the fear of a perineal urinary fistula. The peritoneum and rectum may be damaged, and, finally, the majority of the patients are not good subjects for extensive major surgery. Many exhibit active tuberculosis elsewhere, especially in the lung.

A less drastic operation may be carried out entirely through an inguinal incision, stripping back the peritoneum from the bladder until the vesicles and prostate are reached. However, if complete extirpation of the seminal tract, rather than removal of grossly infected material, is aimed at, the perineal approach to the vesicles must be adopted.

Conclusion.

Treatment should consist as a rule in removal of the epididymis and lower part of the vas. If the body of the testis prove to be involved this must be removed also. Radical removal of the seminal tract should be reserved for those cases in which the whole tract is extensively involved, as offering the only hope of relief or as a secondary operation where, in spite of epididymectomy, lesions in the vesicle and prostate become well marked and progressive. Where a renal lesion coexists, this should be dealt with first if practicable. It must be emphasised that in every case there is the possibility of a renal infection being present, and examination of the urine for tubercle bacilli, together with cystoscopy, should form part of the routine examination. Lastly, and most important of all, the general resistance of the patient to the tubercle bacillus must be increased by the methods which have proved efficacious in the treatment of other tuberculous lesions—namely, fresh air, rest, generous fatty diet, and the use of tuberculin.

R. H. O. B. ROBINSON, M.B. Camb., F.R.C.S. Eng.,
Surgeon to Out-patients, St. Thomas's Hospital.

ROYAL MEDICAL BENEVOLENT FUND.—At the last meeting of the Committee 43 cases were considered and £559 voted to 36 applicants. The following are notes on some of the cases relieved.

Daughter, aged 61, of M.R.C.S. who died in 1895. She is now very deaf and has lost the sight of one eye. She looks after an elder sister who is mentally deficient and also takes care of another old lady who pays 10*s.* a week. Income from investments amounts to £34 per annum. The cottage belongs to the two sisters and rates are £2 4*s.* 8*d.* a year. Voted £26.

Widow, aged 37, of L.R.C.P. & S. who died in 1925. Left with six children, 2 to 18 years of age. Since the death of her husband the family have been living on the proceeds of the sale of the practice, which are now exhausted. Applicant borrowed £17. Receives £2 a month from another charity for one child and £5 a quarter from the Freemasons for another. Eldest girl is a typist earning 24*s.* a week. Rent 12*s.* a week. £10 voted and case to be further considered.

Widow, aged 52, of L.R.C.P. & S. who died in 1912. The eldest son, who earns £156 per annum, does not live at home but allows his mother £54 per annum. A daughter, aged 25, is studying for the post office to enable her to secure permanent post. Youngest son, aged 23, earns £78 a year, lives at home, and gives £1 a week towards his keep. Rent £25 per annum. Voted £20 in four instalments, while the daughter is studying.

M.B. Lond., single woman, aged 68, who practised in London and India and then took a home for delicate children which unfortunately failed. Has an adopted child, aged 14, who lives with applicant but attends school. Income from medical work £2 10*s.*, from sale of fruit £3, from paying guests for week-ends £2 10*s.* Allowance from sister of £97. Rent and rates £37. Voted £26 to be paid in quarterly instalments.

M.R.C.S., aged 72, unmarried. Through inability to obtain locums and having exhausted his savings, applied to the Fund for assistance. Receives Epsom College Pension of £30 and old age pension. Voted £30. Total previous relief given £100.

Daughter, aged 54, of L.R.C.P. who died in 1883. She has no income but looks after her mother, aged 87, whose income is derived from the old age pension, the R.M.B. Fund annuity of £30, and from a supplementary grant of 7*s.* 6*d.* a week from our Guild. Voted £18. Has been helped since 1925.

Daughter, aged 61, of L.F.P.S. Glasg. who died in 1897. Only income derived from various charities to the amount of £77 per annum. Fund grant of £18 renewed. This case has been helped since 1914. Total relief £190.

Daughter, aged 68, of F.R.C.S. Eng. who died in 1885. Has been helped by the Fund since 1920, total relief £129. Asks for increased grant until old enough to apply for the old age pension in 1929. Only other income £48 from late father's estate. Voted £30.

Widow, aged 66, of L.R.C.S. who died in 1909. Tries to maintain herself and adopted daughter by taking paying guests. This year only received £126 from this source. Interest on mortgage, rates, and insurance amount to £58. Has been helped by the Fund since 1910, total relief £183. Voted £10.

Subscriptions may be sent to the hon. treasurer, Sir Charters Symonds, at 11, Chandos-street, Cavendish-square, W.1.

Special Articles.

THE CONTENT OF VITAMINS A AND C IN WATERCRESS.

By KATHARINE H. COWARD, D.Sc. Lond.,
AND
P. EGGLETON, M.Sc. Lond.

(From the Department of Physiology and Biochemistry, University College, University of London, and the Pharmacological Laboratories, Pharmaceutical Society of Great Britain.)

THE work here described is partly the result of a suggestion by Dr. H. Scurfield, and partly an extension of an investigation carried out in connexion with the work of Dr. Corry Mann on the feeding of boys of school age (1926). Previous experiments had indicated that watercress (young shoots as eaten in salads) is a rich source of vitamin A. Indeed, it appeared that if allowance were made for about 85 per cent. water in the watercress and about 10 per cent. water in a sample of New Zealand butter with which it was compared, the two materials were equally rich in vitamin A. The experiment which gave this result was carried out in July, 1924, when the metabolic processes of the plant were presumably very vigorous, and it was decided to carry out similar tests at frequent intervals for 12 months, in order to see how far the vitamin A content might vary with the season. For this purpose it was important that the watercress should be obtained from the same source throughout the year, and that it should have had the same treatment in the way of speed of packing, despatch, &c. We were fortunate in securing a suitable supply from the "Sylvasprings" beds at Bere Regis. Baskets were sent direct to the laboratory twice a week, and the three or four days' supply was kept in water in the ordinary daylight of the animal "kitchen." The watercress was the "winter" variety, so-called on account of its hardiness and its ability to thrive in fresh spring water.

The vitamin C content was estimated in September and October of 1925, and the watercress proved to be an exceedingly rich source of this factor also.

Vitamin A in Watercress.

The technique adopted for the test was that in general use in University College, London, at the time.

Rats weighing 45–55 g. were given a basal diet consisting of :—

Caseinogen, "vitamin free"	20 g.	Yeast extract	5 g.
Rice starch	55 g.	Lemon juice	5 g.
Hardened bean seed oil	10 g.	Salt mixture (McCollum's)	5 g.

This was mixed with water to form a stiff paste and given to the rats, fresh each day, *ad lib.* When growth had ceased, the supplement of watercress was given to each rat separately each day. Resumption of normal growth was taken as an index of an adequate supply of vitamin A in the watercress given.

No precaution was taken to give the animals a supply of vitamin D, for it had not been appreciated at that time that vitamin D has growth-promoting as well as antirachitic properties (Steenbock and Nelson, 1923). The animal body can store vitamin D as it can store vitamin A, but if the diet contains neither, growth will cease when the store of either "A" or "D" is exhausted. If only "A" is exhausted, then growth will be resumed when "A" is supplied. If only "D" is exhausted, then growth will only be resumed when "D" is supplied. Most green plant tissue contains very little vitamin D (Boas, 1926, Chick and Roscoe, 1926), hence when animals which have ceased growth on a diet lacking in "A," and probably also in "D," resume growth on being given watercress, it must be assumed that vitamin A was lacking and that the watercress has supplied it, the vitamin D being drawn from the animal's own reserves, or possibly in small amounts from the watercress supplied. While certain of our animals in the long watercress experiment showed normal growth on the doses given, others did not, and in the light of more recent experience we assume that those that did not resume growth had exhausted their reserve of vitamin D, and that their failure to grow was therefore due to a lack of this factor, of which the basal diet supplied little, if any. We did not make calcium estimations of the bones of any of these animals, but we did of others of our stock, and we know from the figures obtained that our animals varied greatly in the calcium content of their bones after six weeks on our basal diet. Hence, presumably, they varied in their original reserves of vitamin D. It was decided therefore to make one further test of watercress on a basal diet containing ample supplies of vitamin D, to see how far the early results had been vitiated by the lack of this precaution, and also to see whether, when the limitation possibly imposed by a shortage of vitamin D was removed, the watercress might not prove to be an even richer source of vitamin A than the early experiments had indicated.

A summary only of the results of the early experiments is given, as it is evident from the later experiment that there was some factor limiting the response to the large doses of watercress then administered.

TABLE I.

—	Date of beginning of test.	Weight of fresh material required for normal growth.
Preliminary test	10/7/24	0·8–1·0 g.
Youngest parts of shoots ..	10/7/24	0·8–1·0 g.
Older green leaves only ..	7/8/24	0·8 g.
Yellowed, but not withered, leaves	7/8/24	0·4–0·8 g.
Stems only	7/8/24	Very poor growth even on 1·6 g.
Shoots— Upper parts	2/10/24	1·0 g.
	11/12/24	More than 0·8 g.
	15/1/25	0·8 g.
	26/3/25	0·4–0·8 g.
	4/5/25	0·4 g.
	4/7/25	0·4 g.

Before discussing the possible significance of the results shown in Table I., the most recent experiment should be described, for in this, by giving the test animals ample supplies of vitamin D in their basal diet, all differences due to variations in reserves of this factor were eliminated, and when they ceased growth it was because their stores of vitamin A were depleted. The technique for this type of experiment differs somewhat from that of the last.

One litter of six rats, weighing 44–49 g., was given a basal diet of :—

Dextrinised rice starch	75 g.	Dried yeast	4 g.
Agar-agar	2 g.	Salt mixture (Steenbock's 40)	4 g.
Caseinogen "vitamin-free"	15 g.		

This was mixed dry, and spread out in thin layers (100 g. over 4 square feet) in zinc trays. These were set under a mercury-vapour lamp at a distance of 2 ft. for half an hour, the lamp running at 2·5 amperes, 130 volts. At half-time the diet was collected and respread in trays to expose a fresh surface. In this way ample supplies of vitamin D were generated in the basal ration (Steenbock and Coward, 1927).

When the rats were steady in weight (the signs of xerophthalmia were very slight) they were given doses of 0, 0·1, 0·2, 0·4, 0·6, 1·0 g. respectively of watercress daily. The smaller doses were single leaflets, the larger were terminal shoots. They were always eaten promptly.

The result of the test is shown in the chart. It is evident that 0·1 g. contains enough vitamin A to promote normal growth when all other necessary factors are present. It should be noted that rat C is a doe and its response is less than that of rat B,

a buck, on a smaller dose, but this is only consistent with the general behaviour of bucks and does of our colony at this point of their growth.

It is evident from Table I. that there is a seasonal variation in the growth-promoting properties of watercress, the most active shoots being formed in the spring and summer months. That light is a potent factor in the formation of vitamin A by living plants has been shown experimentally by

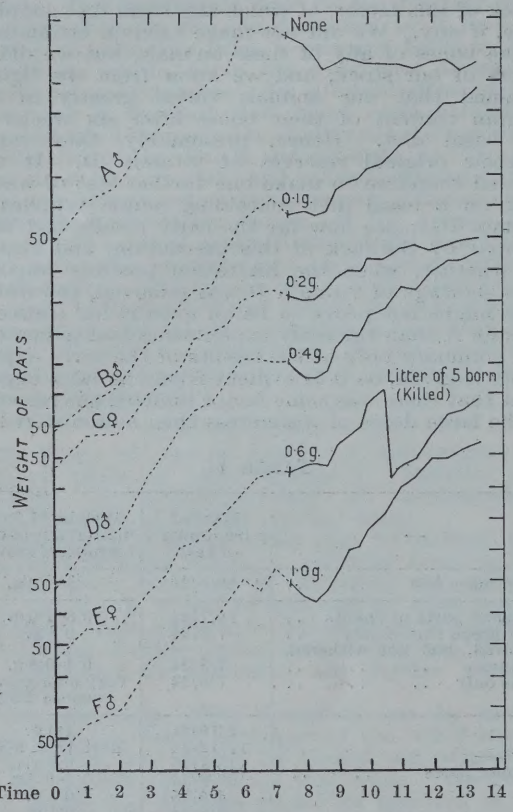

Chart showing weight of six rats over a period of 14 weeks. The weight of each rat at the beginning of the experiment was in the neighbourhood of 50 g. Its subsequent weight at a given period can be estimated from the fact that each division of the vertical ordinate represents 10 g. and each division of the horizontal ordinate represents one week. The dotted line shows their growth before supplements of watercress were given. The rat A served as a control, whilst the others were given small quantities of watercress daily, as indicated. The smallest dose tested (0·1 g.) was sufficient to restore normal growth.

Coward,[1] [2] and that spinach is richer in vitamin D in the summer than in the winter has been shown by Chick and Roscoe. The most recent watercress experiment showed that 0·1 g. of the green leaf contained enough vitamin A to promote normal growth when ample supplies of vitamin D were also given. It would appear, therefore, that in the early experiments which showed a need of 0·4–1·0 g. of watercress, there was probably a shortage of vitamin D; and the fact that less watercress was needed in the summer months than in the winter showed that the shortage was partly, though by no means wholly, removed. It must be concluded that summer watercress, at least, contains some vitamin D, and that it is a most remarkably rich source of vitamin A.

Vitamin C in Watercress.

Little work has been published on the relation of the antiscorbutic value of vegetable tissues with the degree of irradiation of the tissue during growth, but it seems clear that the synthesis of vitamin C can be effected by germinating cereals in darkness, and such synthesis is not demonstrably accelerated by sunlight (Clark, Honeywell and Steenbock, Eggleton and Harris). The watercress used in these tests had grown under favourable conditions of sunlight (August–September), but it does not follow that its antiscorbutic potency was above normal.

Guinea-pigs weighing 200–220 g. were set on the basal diet given below, and given, in addition, measured amounts of watercress shoots fresh daily. Four control animals received no watercress at all.

Basal Diet.

	Per cent.		Per cent.
Ground oats	59	Butter-fat	10
Skimmed milk powder, heated in open trays at 110° F. for 24 hours ..	30	Sodium chloride	1

TABLE II.—*Showing Results of Experiments.*

Expt.	No. of G.-p.	Weight at beginning.	Weight at end.	Dose of watercress.	Period of observation.
		Grammes.	Grammes.	Grammes.	Days.
I.	20	205	145*	—	24
	21	205	170*	—	21
	22	210	170*	—	21
	23	210	180*	—	18
II.	18	225	270	0·5	77
	19	210	305	,,	73
	24	200	270	,,	60
	25	200	290	,,	70
III.	14	220	375	1·0	73
	15	225	345	,,	73
	16	220	355	,,	70
	17	245	400	,,	70
IV.	9	220	400	1·5	60
V.	6	280	355	2·0	60
	8	200	340	,,	63
VI.	1	330	450	2·5	60
	2	240	365	,,	60
	4	315	435	,,	53
	10	225	395	,,	56

* Signifies death of animal.

The controls (20–23) displayed symptoms of scurvy after 12–16 days on the basal diet, and survived only another week. At post-mortem all showed definite scorbutic lesions. Of the animals in batch II., No. 24 remained healthy throughout its experimental period, but the others showed, after 3½–5 weeks the slight "hopping" limp typical of mild scurvy in guinea-pigs. The animals in batches III.–VI. were in good health throughout the period of observation. The minimal protective dose of this watercress in the given experimental condition may therefore be taken as 1 g. per day.

Summary.

Watercress is a remarkably rich source of vitamin A, 0·1 g. only of the green leaf being necessary to promote normal growth in a rat which has become steady in weight on a diet lacking this factor only.

It contains also small amounts of vitamin D.

Its growth-promoting properties are even stronger in the spring and summer than in the winter.

It is a very rich source of vitamin C, 1 g. daily being enough to protect guinea-pigs completely for a period of 70 days.

The writers gratefully acknowledge their indebtedness to Mr. W. Bedford, of Bere Regis, for the regular supplies of watercress and to the Medical Research Council who defrayed the cost of almost the whole of this investigation.

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SURGICAL TREATMENT OF PULMONARY TUBERCULOSIS.

ABSTRACT OF A LECTURE BY DR. F. HÄBERLIN, DAVOS.

In the course of the recent visit to Swiss sanatoria, arranged by the Council of the Royal Institute of Public Health, a lecture was given in the Rathaus, Davos-Platz, by Dr. Häberlin on the treatment by surgical methods of chronic and intractable cases of tuberculosis of the lung. As in every other branch of surgery, said Dr. Häberlin, the key to success in operations on the lung was a careful selection of cases. There were two main groups which responded favourably to collapse therapy. The first group consisted of those patients who after a more or less prolonged rest-cure lost all toxic symptoms, but in whose lungs there was somewhere a cavity which persistently secreted sputum containing tubercle bacilli. Such patients, if they returned home, would be very liable to start fresh foci of disease, either as the consequence of a hæmorrhage, or as a result of a temporary breaking down of immunity through intercurrent disease, pregnancy, &c. In these cases, which were by far the most favourable, collapse therapy often secured a rapid and lasting result if compression of the cavity could be effected. The second group of patients who were suitable for collapse therapy were those who did not respond favourably to rational conservative measures, whose state of immunity was never balanced, who never lost completely such toxic symptoms as fever, tachycardia, night-sweats, fatigue, and so on, and whose local condition showed no improvement. Many of these patients improved rapidly after the institution of collapse therapy, but it was particularly important in this group to observe the rule of unilaterality of disease. Some authors, especially in Germany, advocated compression in every case of cavernous tuberculosis, but it was quite certain that in a number of cases the cavities disappeared completely after a simple rest-cure, especially those connected with the so-called secondary infiltrations. In all such cases conservative treatment should be tried first, for a patient cured without a pneumothorax was undoubtedly better off than one cured with it.

With regard to the question of the type of collapse therapy indicated—pneumothorax or thoracoplasty—in any given case, Dr. Häberlin said that, provided the pleura were sufficiently free to ensure a good collapse, pneumothorax was indicated: (*a*) in cases of the first group when the cirrhotic retraction of the lung and thoracic wall were not very pronounced and the cavities were of moderate size; (*b*) in cases of the second group of partially exudative character, where there was a definite possibility of reactivation or of fresh infiltration on the healthy side (in such cases it was always possible to interrupt a pneumothorax treatment, whereas a rib-resection was irreversible); pneumothorax was also indicated (*c*) where compression was urgent (e.g., rapid increase in the size of cavities, hæmorrhage, &c.), but where there was uncertainty as to the inactivity of the other side; and (*d*) in those patients whose general condition was not good enough to stand the shock of a big operation. Thoracoplasty, on the other hand, was indicated: (*a*) with pronounced cirrhotic retraction of lung and thoracic wall; (*b*) if the cavities were large; (*c*) where pneumothorax was impossible on account of adhesions. The results of pneumothorax treatment varied within wide limits according to different authorities, from 21 per cent. of cures in Heiligenschwendi to 40 per cent. claimed by Dr. Staub, or 73 per cent. if only the period 1918–23 were considered. These discrepancies were explained by the different character of cases submitted to the operation, by the duration of observation before, and of sanatorium treatment after it, and by the measure of painstaking follow-up work of tuberculosis dispensaries. If these results were compared with the fate of patients who had been considered suitable for collapse therapy, but who had either refused the treatment or had been unable to obtain it owing to pleural adhesions, it would be found that 80 to 90 per cent. of the patients were already dead, and the few who were still in good health usually owed it to the fact that they had continued to work and to live in Davos. The risks of thoracoplasty were, of course, much greater, Sauerbruch estimating the actual operation mortality as 13 per cent. This high rate showed that they still operated too often on patients who were not fit for operation, but it was also true that even in apparently hopeless cases the operation sometimes saved lives that would otherwise be lost. Thus a surgeon who did not think primarily about his statistics would probably continue to operate on such risky cases, knowing that the operation offered a last, though small, chance of recovery.

In conclusion Dr. Häberlin referred briefly to the exairesis of the phrenic nerve, either as a prelude or an alternative to pneumothorax or thoracoplasty, and showed a large number of X ray plates to illustrate his points.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

Substitutes for Insulin.

ALTHOUGH the action of insulin given by injection is definitely established, the many attempts to administer it in other ways have had no conclusive results, and in France the tendency is to keep Banting's admirable remedy for three classes of case: (1) diabetes with serious developments; (2) diabetes accompanied by tuberculosis; and (3) cases in which a preparatory course of treatment is required. There is some hesitation before prescribing daily doses in uncomplicated cases, and it is considered preferable to do no more than limit the diet. This being so, there is an obvious opening for drugs which, although less efficacious, can be taken by the mouth, and experiments have been made with the two German preparations, synthalin and glucoferment. There is no doubt that these two drugs will lower the blood-sugar, but they cannot be compared to synthalin in efficacy, and cannot replace it in serious cases. The objection to synthalin is that it produces digestive disturbances; glucoferment is better tolerated. The two preparations are chiefly useful when the aim is merely to increase the amount of food taken. Although their action is not wholly satisfactory, it is beyond dispute that in the absence of insulin their discovery would have been thought a great step forward, and they do lend hope that some day it may be possible to find an oral remedy for diabetic glycosuria.

Treatment of Broncho-pneumonia in Childhood.

No longer do we accept the simple view that sera are purely curative and vaccines purely preventive in their action. Thus vaccines have been shown to have definite therapeutic value in the broncho-pneumonia of infants, though serum is used in conjunction with them because by themselves they act but slowly. Opinions expressed at the recent congress on pædiatrics at Geneva were clearly in favour of the simultaneous use of antistreptococcal serum and vaccine in this form of pneumonia. Although, however, the figures of the last two years show improved results in treatment, it is far too soon to boast about them. The success of these bacteriological agents does not justify us in dispensing with the classical means of combating pneumonia, whose value time has proved, and at present the new methods must be regarded as no more than supplementary.

Dried Milk Fever.

It has sometimes been noticed that babies brought up on dried milk develop bouts of high fever, with no other evidence of disease; this fever abates as soon as dried milk is no longer given. Rare though it is, this condition is sufficiently troublesome to deserve notice. Its origin does not seem to be an infection,

and the best explanation seems to be that of Dr. Lust, who puts it down to the toxic action, on the heat-regulating centres of specially sensitive children, of a preparation containing salts in high concentration.

Insulin in Obliterative Arteritis.

Before having recourse to surgery, an attempt should be made to treat arteritis obliterans by medical means. Radiotherapy and diathermy may be used, but sometimes insulin is equally successful in cases of intermittent claudication and even angina pectoris. I have had one case in which a patient on this treatment was able to walk better after a few days, his range of movement increasing from several yards to several hundred yards within two or three weeks. He put on weight, his general condition improved, and his pain disappeared. It must be noted that in the reported cases no objective sign of vascular degeneration had been detected, and it is clear that treatment has to be continued for a very long time. Subcutaneous injections of 10 units of insulin can be given once a day for one or two months, and if the results are encouraging the dose can then be reduced.

Acute Rheumatism.

The acute articular rheumatism of childhood should not be regarded as an acute affection with relapses, but rather as a prolonged disease with exacerbations. Rheumatism is above all a carditis, and should be looked on as one of the chronic diseases of which syphilis is the type. This idea, developed in France by Bezançon and Matthieu Pierre-Weil, furnishes a rule which can be closely applied in treatment. The object is, in the first attack of rheumatism, to sterilise the body, and this is done by giving very large doses of salicylate of soda over several months. The drug is administered in rheumatism with the same object as arsenic, mercury, or bismuth are administered in syphilis. By combining it with equal parts of bicarbonate of soda much larger doses can be given than were formerly usual, and in certain cases a dose of 12·0 g. can be prescribed.

NOTES FROM INDIA.

(FROM OUR OWN CORRESPONDENT.)

Retrospect of the Tropical Medicine Congress.

THE success of the Seventh Congress of the Far Eastern Tropical Association, held in Calcutta from Dec. 5th–24th, exceeded all our expectations. It has been the largest and the most interesting Congress held under the auspices of the Association; some 900 members attended, and a large proportion took part in the discussions. An attractive episode was the luncheon given by the Rotary Club of Calcutta, at which Colonel J. D. Graham, Public Health Commissioner with the Government of India, outlined the activities of the League of Nations in preventing the spread of epidemic diseases along the highways of traffic and commerce throughout the world. Delegates on their way to and from the scientific discussions were reminded of the historical background to modern hygiene by the progress of the sacred bull throughout the teeming thoroughfares of the city. The spacious grounds and buildings of the Medical College afforded ample space for the Sections which overflowed from the adjacent Tropical School of Medicine.

The Scientific Sections.

The Section of Medicine opened with a remarkable paper by Lieut.-Colonel F. A. F. Barnardo, I.M.S., Principal of the College, on multiple and secondary infections in tropical diseases. By recognising and treating the secondary factor in the course of enteric fever the author claims to have removed most of the terrors of a disease which is a constant menace to Europeans in the tropics. Dr. Wu Lien Teh's paper on pneumonic plague was equally enlightening, and there was general agreement on the best lines for investigation to take in bubonic and pneumonic plague epidemics. A joint discussion between the Association and the League of Nations Plague Subcommittee gave promise of material advance in preventive methods. The Malaria Section met over four days. Malaria control was introduced by Sir Malcolm Watson, and Lieut.-Colonel S. P. James, I.M.S., recounted the fascinating experiments being made in England on the treatment of induced malaria. Discussion showed opinion to be converging towards a definite pronouncement as to the most advantageous combination of antilarval measures with drug administration. The Cholera Section discussed the administration of bilivaccine, and considered the epidemiology of the disease from many aspects. In the Deficiency Diseases Section Lieut.-Colonel R. McCarrison's persuasive introduction failed to reconcile the two schools of thought on the ætiology of beri-beri and epidemic dropsy. Dr. F. d'Herelle read a series of papers on bacteriophagy in relation to cholera and dysentery, and should his discoveries be corroborated, a new aspect of immunity must be reckoned with. Discussion in the Leprosy Section revealed the notable advances made in the treatment of this disease, and the fact that cure is not only possible but probable in all the more favourable cases.

The New Outlook.

There is no question that the Congress visitors must have gained a profound impression of the wealth of clinical material in India, especially in Bengal, and it is to be hoped that the discussions may be the starting-point of a new era in research and of an organised and systematic record of clinical observations of cases. Add to these a scientific critical assessment of the value of such observations, hitherto so noticeable by its absence among the indigenous medical profession, and we should be on the eve of a great advance in the pathology and epidemiology of the more common diseases of India. Official delegates will have seen reason to press their Governments, central or provincial, for a definite declaration of policy on the two chief needs of the time: (1) A health policy for India associated with the formation of a Ministry of Health; (2) A definition of the standard of medical education to be reached at medical schools and colleges which will enable their graduates to carry out this policy. If the difficulty in issuing such a declaration of policy is purely financial, it is to be hoped that the Government of India will not hesitate to invoke the aid of the Rockefeller Foundation, even if that would involve some loss of control of the actual measures to be adopted. The need is urgent. Preventive medicine is still unorganised in India, medical education is decades behind medical science, and it may be necessary for the League of Nations to reinforce the representations which have been made by every department of preventive medicine and every research worker in India.

The Burden of Malaria.

The prevalence of malaria after the monsoon throughout the whole of India has again drawn attention to the extreme seriousness of this disease not only in terms of mortality, but also as a factor of inefficiency. In Calcutta itself the mortality has risen from 1·4 per mille in 1924 to 1·6 per mille in 1926. Many educational centres show an average absenteeism from college or school of seven days per student per annum from malaria alone. This is serious enough from the educational standpoint, but leaves untouched the industrial aspect. The possibility of obtaining a body of healthy malaria-free labour in the country is at present very remote. No disease in the tropics repays scientific investigation more than does malaria, if a concentrated survey be first undertaken on rational principles. The earlier favourable reports regarding the use of plasmochin as an antimalarial remedy do not appear to have been thoroughly substantiated, except in the case of subtertian fever. Its advantages over the clumsy quinine salts are

many and obvious, but difficulties arising from its toxicity have not been eliminated. Until a less toxic preparation has been devised it can hardly become a popular remedy capable of being distributed to infected populations at large.

UNITED STATES OF AMERICA.

(FROM AN OCCASIONAL CORRESPONDENT.)

Painless Treatment of Leprosy.

FOR some time experiments have been carried on at the National Leprosarium at Carville, Louisiana, with the object of finding a painless and efficient method of administering chaulmoogra oil. Among the oil-soluble analgesics benzocaine has been found the most satisfactory, and after animal and human experimentation the following formula was adopted for routine treatment of several cases.

Chaulmoogra oil	90
Olive oil	10
Benzocaine	3

The preparation is described as follows:—

"Three grams of benzocaine are added to 10 c.cm. of olive oil and mixed with a stirring rod; this is then added to 90 c.cm. of chaulmoogra oil previously warmed on water bath to 70° C.; the oil mass is then agitated in a flask until all remaining crystals of benzocaine are dissolved. The mixture is filtered through filter paper and then heated on water bath at 100° C. for one hour."

As a routine dosage 5 c.cm. of this mixture is given in the deltoid region, alternating semi-weekly with 8 c.cm. in the buttocks, the oil being injected at body temperature. Preliminary case reports with illustrations have appeared in the weekly reports issued by the U.S. Public Health Service. Dr. Johansen is now investigating whether the addition of benzocaine may make it feasible to administer chaulmoogra oil by the mouth.

Christmas under Prohibition.

It is yet too soon to say how great will be the mortality from "wet" celebrations of Christmas and the New Year, but it is safe to forecast that many will die from poisoning. The extra demand at this season cannot possibly be met from the stores of smuggled liquor. Immature "moonshine" will be mixed with denatured alcohol and sold no doubt as "Pure Scotch." Alcohol denatured by the Government is now said to contain formaldehyde, 1 per cent.; pyridine, 1 per cent.; diethylphthalate, 1 per cent.; wood alcohol, 0·5 per cent., and bichloride, 0·1 per cent. Commercial chemists who test liquor to determine its safety for drinking purposes violate the law in so doing, and are to be prosecuted, according to instructions issued by the Commissioner, in Washington.

Artificial Respiration in Infantile Paralysis.

In cases of poliomyelitis, wherein the respiratory centre becomes affected, artificial respiration has often been resorted to in a desire to prolong life. I have not heard of any case in which life has been saved by this procedure, but there is reported from Oconto, Nebraska, the case of a 16-year-old girl who has been kept alive for 34 days by this method. It is said that some hope of her ultimate recovery is entertained.

IRELAND.

(FROM OUR OWN CORRESPONDENT.)

Work of the Irish Medical Committee.

AT a recent meeting of the Irish Medical Committee held in Dublin it was resolved that the Minister for Local Government and Public Health be requested to receive a deputation in connexion with (1) the inadequate salaries of poor-law medical officers in co. Mayo, co. Longford, and elsewhere; (2) the appointment of locum tenents nominated by doctors going on leave; (3) promotion under the Local Authorities (Officers and Employees) Act, 1926; (4) remuneration for registrars of births, deaths, and marriages; (5) fees for committal of dangerous lunatics; and (6) arrangements for the treatment of private patients in district and county hospitals. It was also decided that representations should be made to the Appointments Commissioners as follows: (1) that a recurring fee of £1 for medical candidates appearing before different Selection Boards is excessive; (2) that candidates with no prospect of being appointed should not be put to the expense of appearing before the Selection Boards unless on the expressed desire of the candidates; (3) that the physical examination appears unnecessarily severe, and that it should have a direct relation to the physical requirements necessary for the efficient medical discharge of the duties of the office to be filled; (4) that, if required, medical members of Selection Boards should receive reasonable remuneration. Amongst other business discussed was the question of pensions and fixity of tenure for medical officers in the Free State Army, and it was agreed that such medical officers should be engaged on a permanent and pensionable basis.

Medical Certificates and the School Attendance Act.

A good deal of trouble is being caused to medical practitioners in the Irish Free State, especially to those engaged in the poor-law service, by the working of the School Attendance Act. The Act provides that the production of a medical certificate of illness of the child should be a good defence in cases where the parents are prosecuted for non-attendance of a child at school. It makes no provision, however, for such certificates to be given or to be paid for, leaving the onus on the parents. In most cases the parent is unable to pay a fee for a medical certificate, and in many cases there is no medical man in attendance. Poor-law medical officers who were at first inclined to give certificates gratuitiously, as a matter of charity, have found that this kindness has increased their work unexpectedly. They are now sent for to visit children suffering from trivial illnesses in the hope that, in the event of questions being asked as to the child's absence from school, a certificate may be obtainable. The position is unsatisfactory, and the Irish Medical Committee has decided to recommend medical men to refuse to grant any certificates in school attendance cases.

Annual Dinner of the 83rd (Dublin) Hospital.

The annual dinner of the members of the Dublin unit of the 83rd (Dublin) Hospital, who served when the hospital was at Boulogne in 1917–18, was held last Saturday at the Royal College of Surgeons, Dublin. Colonel Sir William Taylor, who organised the unit, was in the chair, and 15 other members were present.

MEDICINE AND THE LAW.

Criminal Neglect of Health.

THERE have been several recent reminders of the penal consequences of omitting to obtain adequate medical aid for those who require it. A coroner, investigating a death due to cancer, found that treatment had been given by an untrained woman described as a herbalist. He pointed out that, if the patient's disease had not already been far advanced before such treatment began, the herbalist might well have found herself in the dock on a charge of manslaughter. A month ago at the Central Criminal Court a charwoman, aged 60, was charged on indictment and on a coroner's inquisition with the manslaughter of her daughter. Ten months earlier the daughter had disappeared; it was afterwards found that for the whole period she had been living in her mother's room in Walworth in a state of hideous neglect and

indescribable filth. The mother never informed anyone of her daughter's ill-health and never called in a doctor. The medical evidence proved death was due to blood poisoning consequent upon an ulcer of the hip-joint and general neglect, and that medical attendance would have saved the daughter's life. There was some doubt of the prisoner's sanity, but she was found fit to plead and take her trial. She was found guilty and sentenced to ten years penal servitude.

The same problem of legal insistence upon recourse to medical aid has arisen in cases which fall far short of manslaughter. Parents fail sometimes to realise the duty placed upon them by Section 12 of the Children Act. They may be genuinely affectionate and kind towards their children; they may be far from committing any act of deliberate cruelty such as that section punishes; but they are unaware that the section also makes it a misdemeanour to neglect a child "in a manner likely to cause unnecessary suffering or injury to health," and that these words have been held to cover a parent's refusal to allow an operation upon his child for the removal of adenoids or enlarged tonsils. A prosecution of this nature was brought last month against a Cumberland farmer and his wife. The medical authorities of the county had for four years been trying to have the operation performed, but the parents (though in other respects exemplary) invariably refused permission. The magistrates adjourned the case for a month in order that the operation might be carried out, the prosecution intimating that, if the operation took place, the summons would be withdrawn. Though the requirement of the law may take some people by surprise, there is no doubt whatever of the legal position. One of Mr. Justice Darling's last decisions in the Divisional Court made it perfectly clear that, if the justices are satisfied upon the medical evidence that failure to allow an operation would cause unnecessary suffering, the parents will be held responsible under the criminal law.

Public Conveniences at Railway Stations.

It has recently been stated that sanitary conveniences are no longer being provided at the stations of the underground railways in London. It seems to be the fact that, in rebuilding the St. James's Park and Piccadilly Circus stations (where the local authority has already provided sanitary accommodation in the street outside), the railway company concerned has made no such provision. Some may wonder whether London is already sufficiently equipped in this respect or whether it is not a mistake to miss any chance of maintaining and supplementing the existing facilities when the population (of both sexes) which daily frequents London seems to be constantly increasing. The old-fashioned urinal, too conspicuous perhaps for modern tastes, has largely disappeared from the surface of our streets. The needs of street traffic, as well as æsthetic considerations, have driven it underground where modern engineering manages to make a greater area available for greater requirements. But public conveniences cannot be made invisible without creating a situation of hardship, especially for strangers who visit the metropolis.

The Public Health Act of 1907 empowered local authorities (in districts where the Act was in force) to require urinals to be attached to all public-houses, refreshment rooms, and places of public entertainment. The statutory requirement for railways was less direct. The Railway and Canal Traffic Act of 1854 requires railway companies to afford reasonable facilities for receiving, forwarding, and delivering traffic, and in this context "traffic" is defined as including passengers. Naturally the scope of what is reasonable was much debated in the courts. In 1894, for example, Mathew J. declared a cloak-room to be the most reasonable of facilities at a railway station, and on the same occasion Collins J. (afterwards Master of the Rolls) spoke significantly of the "rising standard of convenience to which railway companies are obliged to conform." In the following year the West Ham Corporation, in an action against the Great Eastern Railway, elicited the decision that the omission to supply free water-closets for passengers' use was not a denial of reasonable facilities; this decision, however, was not unanimous, for Sir Frederick Peel (one of the Railway and Canal Commissioners) took the view that railways should be compelled to give such accommodation without payment. The underground railways in London are, of course, in a special position. Their space below ground is not unlimited; it may even be below sewer level; and their journeys are short. Nevertheless there seems no reason why the ever-increasing crowds of passengers should be denied facilities at any single station or be left in doubt as to which station contains what they require. The big London shops and stores long ago realised that the provision of lavatory accommodation was an attraction to customers if not indeed a positive duty. If the railways—whatever their freedom from statutory obligation—should take the same view, the public will undoubtedly be grateful.

Public Health Services.

DISSATISFACTION AT DUNDEE WITH PANEL PRACTICE.

WE learn from the report of the Dundee Panel Committee for 1927, which reached us just as the year turned, that the past year has been characterised by a feeling of dissatisfaction and insecurity among panel practitioners in the third largest Scottish burgh. This is at first sight surprising in view of the fact that the National Health Insurance scheme has become elsewhere such an integral part of our everyday life as to lead to tacit acceptance of its benefits. We need do no more than recall a remark made by the Royal Commission in 1926 ("We are satisfied that the scheme of national health insurance has fully justified itself and has on the whole been successful in operation") and the more recent statement of the Chief Medical Officer to the Ministry of Health that through this scheme "the four means of preventive medicine—compensation, early restoration, rejection of morbid sequelæ, and positive hygiene teaching—are being applied in one form or another to seven million patients every year." It is therefore a matter for earnest inquiry what has created the adverse feeling among the medical men and women who serve the large industrial population of Dundee. The feeling, it is stated, is due to a variety of causes, but it does not appear from the report that Dundee practitioners take objection to the terms of their service or to their contract with the insurance committee. The feeling seems to be due rather to the administration of the Act and of the Regulations framed under it. The most pressing cause of dissatisfaction is "the apparent inadequate remuneration received by the doctors." The remuneration this year, the report states, "promises to work out about 8*s.* 1½*d.* per head, which shows a still more marked reduction from the agreed average of 9*s.* of which the only explanation offered is the alleged inflation." Now, whatever may be urged against the method of remuneration under the Acts, the method itself is clear and above board. Panel practitioners themselves are directly represented on the central distribution committee, which settles the quota for each year and distributes the available money (dependent upon the number of insured persons paying contributions) among those who treat insured persons resident in their area. The number of credits given to each practitioner does not, of course, necessarily represent a corresponding number of insured persons, for the number is a mean, as it is impossible for any practitioner to say how many persons are on his list at a particular time. The insurance committee's register is dependent upon notifications from approved societies of the names of new members, these being in turn dependent upon the reports of agents. Error

made at the outset cannot be corrected until the surrender of contribution cards at the end of the period, when the processes of inflation and deflation, which are constantly going on, are balanced one against the other. It is unfortunate that the process of elimination does not take place at the same rate as the process of aggregation, for then the payment to a practitioner would be an exact multiple of the capitation fee by the number of insured persons on his list, but it is difficult to see how Dundee practitioners have arrived at the conclusion that they are receiving 8*s.* 1½*d.* instead of 9*s.* per head, seeing that the final settlement for the year cannot be made until the final credits are known. Inflation is unavoidable. It may be kept down to reasonable limits by clearance schemes, but no method has been devised to abolish the difficulties of registration which are due in large measure to ignorance and fecklessness on the part of the insured population which has not learned to play its part in the scheme. Many insured persons lose their medical cards or refuse to surrender them when asked for. But the central pool is nevertheless duly credited with the fees and the whole of this pool is duly distributed among insurance practitioners.

Other causes of dissatisfaction are said to be the spread of erroneous information by agents of the societies, but this, however annoying, can hardly affect the practitioner's actions which are governed by the regulations and by his own sense of duty. Some concern at the increase in sickness benefit is inevitable, for it is so enormous as to imperil the proper administration of the scheme. It will, we fear, be found on investigation that there is a genuine increase in the amount of disabling sickness and that this explains in part the unparalleled demands upon medical service. But it should not be forgotten that insured persons are learning to attend in the earlier stages of illness and that more work of a preventive nature is being done. After these factors have been taken into account there may (or may not) be a margin of careless certification due to the coercion of practitioners by insured persons who desire to get some cash return for their contributions. The recent limitation on the right of insured persons to transfer at any time is a welcome addition to the practitioner's armoury against this kind of attack.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED DEC. 31ST, 1927.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 247 (last week 255); scarlet fever, 1595; diphtheria, 1153; enteric fever, 29; pneumonia, 1802; puerperal fever, 34; puerperal pyrexia, 89; cerebro-spinal fever, 3; acute poliomyelitis, 8; acute polioencephalitis, 1; encephalitis lethargica, 37; dysentery, 11; ophthalmia neonatorum, 61. There was no case of cholera, plague, or typhus fever notified during the week.

Deaths.—In the aggregate of great towns, including London, there was no death from small-pox, 2 (0) from enteric fever, 60 (14) from measles, 6 (0) from scarlet fever, 32 (10) from whooping-cough, 53 (13) from diphtheria, 59 (19) from diarrhœa and enteritis under two years, and 128 (24) from influenza. The figures in parentheses are those for London itself. If the return were complete it would imply an agreeable drop in the mortality from measles, but the figures are admittedly affected by delayed registration owing to the holidays. Of the 46 fatal cases outside London 9 were reported from Bristol, 11 from Manchester, 2 from Salford, 1 from Warrington, and 3 from St. Helens; while the figures from Glasgow and Dublin for the same week were 45 and 13 respectively. The deaths from enteric fever outside London occurred in Preston and Darlington, one each. The number of stillbirths registered during the week was 283 in the great towns, including 49 in London.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Lt.-Comdr. W. J. Colborne to *Impregnable*.
Surg. Lt. C. T. Hyatt to *Vivid*.
Surg. Comdr. L. F. Cope is placed on the retd. list with the rank of Surg. Capt.

ROYAL NAVAL VOLUNTEER RESERVE.

Surg. Comdr. R. Wilbond is placed on the retd. list and to be Surg. Capt. (retd.).
Surg. Lt. R. Hall to be Surg. Lt.-Comdr.
Proby. Surg. Lt. R. L. Stubbs to be Surg. Lt.

ROYAL ARMY MEDICAL CORPS.

The undermentioned are apptd. Cols. Comdt.: Maj.-Gen. Sir M. P. C. Holt, late R.A.M.C., vice Maj.-Gen. Sir W. G. Macpherson.
Maj.-Gen. Sir S. G. Guise-Moores, retd. pay, late R.A.M.C., vice Lt.-Gen. Sir A. T. Sloggett.
Lt.-Col. A. C. Adderley, half pay list, late R.A.M.C., retires on retd. pay on account of ill-health.
Maj. H. H. A. Emerson to be Bt. Lt.-Col.
Maj. B. H. H. Neven-Spence retires on retd. pay.
Lt. (on Prob.) T. F. M. Woods from the secd. list, is restd. to the estabt.
Temp. Lt. S. M. Burrows to be Lt. (on prob.).

ARMY RESERVE OF OFFICERS.

Lt.-Col. H. B. G. Walton having attained the age limit of liability to recall, ceases to belong to the Res. of Off.
Lt.-Col. R. G. H. Tate ceases to belong to the Res. of Off., on account of ill-health.

INDIAN MEDICAL SERVICE.

The undermentioned officers retire: Col. G. Browse and Lt.-Col. W. W. Jeudwine.

COLONIAL MEDICAL SERVICES.

Dr. W. E. Burton, District Medical Officer, St. Kitts, to be Principal Medical Officer, British Honduras; Dr. C. T. MacCarthy, late Government Medical Officer, British Guiana, to be Medical Officer, Federated Malay States; Dr. D. Duff, Senior Medical Officer, to be an Assistant Director of the Medical Service, Gold Coast; Dr. S. L. Brohier, Medical Officer, to be a Senior Medical Officer, Gold Coast; Dr. K. K. Grieve, Medical Officer, to be a Senior Medical Officer, Nigeria; Dr. W. E. Glover, Medical Officer, to be a Senior Medical Officer, Nigeria; Dr. R. B. Hawes, Medical Officer, Straits Settlements, to be Professor of Medicine in the College of Medicine, Singapore; and Dr. V. L. Ferguson, Resident Surgeon, Colonial Hospital, Grenada, to be Chief Medical Officer, St. Lucia. Mr. J. P. M. Donelly, Mr. W. S. Thomas, and Mr. A. Reid to be Medical Officers, West African Medical Staff; Mr. A. V. G. Price to be District Medical Officer, British Solomon Islands Protectorate; Mr. E. C. Morris and Mr. W. E. Holmes to be Medical Officers, Federated Malay States; Miss V. E. K. Stuart to be Lady Medical Officer, Federated Malay States; and Lt. E. L. Robert to be Medical Officer, Straits Settlements.

DEATHS IN THE SERVICES.

Lt.-Col. Francis Edward Swinton, C.I.E., late I.M.S., whose death at the age of 60 is reported from Bombay, was the eldest surviving son of the late Robert Blair Swinton, of the Madras Civil Service. He received his medical education at St. Bartholomew's Hospital, and after qualifying with the conjoint diploma entered the Indian Medical Service and was for some years medical officer of the 28th Bombay Pioneers. Later he acted as personal assistant to the principal medical officer of the Bombay Command, and was medical storekeeper for the Government of Bombay. Subsequently he became Deputy Director-General of the Indian Medical Service, and afterwards medical storekeeper to the Government of Madras. He received the C.I.E. in 1919 and retired in 1922.

Major-General Sir James Maher, late R.A.M.C., who died on Jan. 7th, aged 69, was the youngest son of Mr. John Edward Maher, of Liskelly, Galway. Educated at Monaghan and Dublin, he qualified as L.R.C.P. & S. Edin. in 1883, and joined the Army Medical Service in 1885, when he served in the Sudan operations. Later he took part in the Ashanti campaign of 1895–96. In the late war he was successively Deputy Director of Medical Services, Lines of Communication, Mediterranean Expeditionary Force; Director of Medical Services, Egypt; and Deputy Director of Medical Services, Irish Command. He received the C.B. in 1916 and the K.C.M.G. in 1918, in which year he was promoted major-general. Sir James Maher married, in 1902, Gertrude, daughter of Mr. J. F. Browne, of the Bengal Civil Service.

Correspondence.

"Audi alteram partem."

GASTRO-DUODENAL ULCERATION.

To the Editor of THE LANCET.

SIR,—Prof. MacLean and his collaborators have performed a useful service by publishing a series of cases of gastric and duodenal ulcer, with radiograms before and after treatment, in which healing has been brought about by medical means. They thereby confirm the published and unpublished results of many physicians in this and other countries. The value of their conclusions would, however, have been greatly enhanced if they had not been partly based upon assumptions which seem to me unwarrantable in the present state of our knowledge.

The first assumption is embodied in the use of the word "cure"—always an unwise word for the physician to employ excepting in specific diseases for which we possess a specific remedy. Medical treatment can undoubtedly expedite the healing of an active ulcer and in a high proportion of well-selected cases this healing may be long enduring or permanent, but in my experience it is not justifiable to speak of a group of cases of gastric ulcer as "cured," and of their recurrences as "extremely rare" when they have only been watched for periods of a year or less. Most of the cases reported in Prof. MacLean's paper began their treatment less than a year ago. If he will report again on the same and additional cases in five and ten years' time, the efficacy of his treatment and after-treatment will have stood a better test and he will then be better able to assess factors favourable or adverse to the permanent healing of ulcers.

A second assumption is that the effects of the treatment are to be attributed to the alkalis as employed. From the text one would gather that the quick disappearance of symptoms and the later disappearance of radiological evidences of ulceration were to be attributed to this particular method. As a matter of fact, the majority of ulcer patients lose their symptoms within 48 hours of going to bed on a soft diet with properly spaced feeds, and ulcers can also be shown (radiographically) to heal in a few weeks on a variety of treatments in which the intensive employment of alkalis does not necessarily play a part.

A third assumption is that the control of acidity can "easily" be achieved by this or any other method. Unless it can be shown with the aid of the continuous test-meal that this has been accomplished in a number of cases with varying degrees of gastric acidity, this statement must be accepted with reserve. Prof. MacLean speaks of alkalosis as a bogy. It may be rare nowadays, but those who have followed the literature and have themselves seen patients both slightly and seriously ill from alkalosis in the early days of intensive alkaline therapy will not be prepared to agree with him in this. Furthermore, there are other contra-indications to intensive alkaline treatment besides renal disease and chief among these is pyloric stenosis, some cases of which he seems to suggest may be suitable for treatment by this method. Finally, it is difficult not to read into the paper as a whole an undercurrent of assumption that the method has a claim to originality. In this regard it is a pity that it includes no proper reference to the writings of Sippy or Hurst.

I do not advance these criticisms from any sense of opposition to medical treatment, of which (with judicious selection of cases) I am a staunch advocate, but because I believe it is of the greatest importance in matters of this kind to base our contentions on sound and well-weighed evidence. We are looking to the units, with all their facilities for research and follow-up inquiries, whenever possible to supply us with such evidence.—I am, Sir, yours faithfully,

Wimpole-street, W., Jan. 7th, 1928. J. A. RYLE.

To the Editor of THE LANCET.

SIR,—We have for so long practised and taught the important principles embodied in the paper by Prof. MacLean and his co-workers in your issue of Jan. 7th, that we hasten to express our appreciation of this additional confirmation of the value of the treatment of gastric and duodenal ulcer which we owe to the genius of the late Bertram Sippy. The use of alkalis in gastric disease dates back at least to the sixteenth century, the principle of small frequent feeds had been employed with uncertain success for fully 50 years, it was the application of the two principles with rigour and logic that enabled Sippy to evolve the treatment which has yielded the gratifying results experienced by so many observers in all countries during the last decade.

The evidence that peptic ulcer, even when deeply penetrating the tissues in the region of the lesser curvature of the stomach, will heal when so treated has become abundant since radiography has been employed in following up the cases. In conjunction with Dr. F. G. Nicholas, one of us published a communication in the *British Medical Journal* last June giving the results in a series of such cases studied with the aid of X rays at the Middlesex Hospital and including a survey of existing literature on the subject. The papers by Einhorn and Crohn, and by F. W. White in recent numbers of the *American Journal of Medical Sciences*, and by Moutier and Porcher in the *Presse Médicale* of Sept. 7th, may be taken in conjunction with Prof. MacLean's article as supplying still later refutation of the astonishing doctrine, upheld by certain surgeons, that gastric ulcers can never be made to heal.

We feel, however, that there are two very important points to which Prof. MacLean and his co-workers give insufficient attention in their article; the first is, that foci of infection, particularly in the mouth, must be eradicated. It is widely accepted that such foci are the commonest causes of ulceration by producing bacterial emboli, and unless they are removed there must always be grave risk of recurrences. The second point is the importance of diet. The administration of small, easily digestible feeds of high caloric value, at short intervals, not only diminishes both peristalsis and the excitation of secretion, but repeatedly provides the stomach with neutral material, whose buffers tend to lower acidity to an extent almost as great as that produced by the alkalis. We are in agreement with many British and foreign observers, of whom Alvarez may be quoted as a prominent exponent, in finding that if a convalescent patient is trained to take a little milk or to nibble a dry biscuit between his small meals he will remain as free of symptoms as if treated with alkali on a less careful diet. Moreover, if the patient comes from a class where it is impossible to expect him to continue treatment in a thorough manner for a long period, it is easier to persuade him to take dietetic precautions than to submit to the use of medicines for more than six months.

Embodying as it does nothing more than the main principles of the Sippy treatment, the paper of Prof. MacLean and co-workers is one with which practically all physicians experienced in the modern treatment of gastric ulcer will agree. It is perhaps to be regretted that a paper has come from a medical unit without reference to the extensive current literature on this subject, and we feel, in addition, that longer experience with the modern method will lead Prof. MacLean and his co-workers to be more judicious in their use of the word "cure" unless they pay increased attention to the factors of sepsis and diet to which we have referred above.

We are, Sir, yours faithfully, T. IZOD BENNETT
ALAN MONCRIEFF

London, W., Jan. 9th, 1928.

DEATH REGISTRATION AND THE FATALITY-RATES OF SMALL-POX.

To the Editor of THE LANCET.

SIR,—It is an almost universal medical belief (and I share this belief) that the fatality-rate among persons attacked by small-pox is much greater, age for age, among the unvaccinated than among the vaccinated. An apparent contradiction is furnished in the small-pox statistics [1] of England and Wales for the four years 1923–26. The following table furnishes the numbers of cases of "small-pox" in vaccinated and unvaccinated persons over 15 years of age, together with the numbers of deaths and the fatality-rates per cent. for each of these years and for the whole period. The comparison is confined to age 15 and over for the simple reason that practically all the cases under 15 are among the unvaccinated.

	VACCINATED.			UNVACCINATED.		
Year.	Cases over 15 years.	Deaths.	Case-mortality per cent.	Cases over 15 years.	Deaths.	Case-mortality per cent.
1923	369	2	0·5	734	2	0·3
1924	635	2	0·3	1241	—	—
1925	933	3	0·3	1824	—	—
1926	2073	6	0·3	*3116	2	0·06
Totals	4010	13	0·3	6915	4	0·06

* Including 94 cases "doubtful" as to vaccination state.

The figures are, of course, too small to carry any great weight, but it will be observed that in each year the fatality-rate was greater among the vaccinated than among the unvaccinated. In a total for these four years of 11,019 cases, 4010 occurred among the vaccinated with 13 deaths (a fatality-rate of 0·3 per cent.) and 6915 occurred among the unvaccinated with four deaths (a fatality-rate of 0·06 per cent.) That is to say, the fatality-rate among vaccinated cases was just five times as great as among unvaccinated cases. It would be interesting to read possible explanations of this statistical anomaly which your readers may have to offer. Clearly some explanation is required, in justice to vaccination, and if, as I believe, the anomaly is due to faulty registration, the figures seem to me to call urgently for :—

1. A special inquiry into the *true* cause of death of all fatal cases of "mild small-pox" in this country.

2. Revision of the rules of death registration under which a death certified by the doctor in attendance as due to chronic nephritis, cerebral hæmorrhage, or other disease or condition unconnected with small-pox is registered and entered in the vital statistics as a death from small-pox.

I am, Sir, yours faithfully,

R. P. GARROW,
Medical Officer of Health and School Medical Officer,
Jan. 4th, 1928. Chesterfield.

AURAL SYSTEMIC INFECTION.

To the Editor of THE LANCET.

SIR,—In your issue of Dec. 31st, 1927 (p. 1390) Mr. R. D. Owen describes a case of "aural systemic infection" and attributes the nephritis, arthritis, bronchitis, and empyema to the mastoiditis which preceded them. Now, otitis media and the other complications are frequently met with nowadays in general practice as a complication of sore-throat. Any of these complications may occur singly, or in conjunction in the same patient as the result of an attack of "influenza" or tonsillitis, and I would suggest that in Mr. Owen's case the mastoiditis and the other complications were not in the nature of cause and effect but were all manifestations of an infection entering the system probably via the throat.

[1] Quoted from the Annual Reports of the Chief Medical Officer, Ministry of Health, 1923 (p. 37), 1924 (p. 37), 1925 (p. 38), 1926 (p. 39).

Mr. Owen, indeed, though claiming that the "septic focus" was in the mastoid, yet, in the course of his description of hæmorrhagic mastoiditis, admits himself that "the disease itself is a systemic infection," which amounts to much the same thing as my suggestion.

I am prompted in my comment by the fact that early in 1926 I saw a young man who, during an epidemic of tonsillitis, was taken ill with the latter. Complications in order were otitis media, nephritis, aseptic pulmonary infarction, and peripheral thrombosis. There was also profound anæmia in my case—the man looked as if he had had a severe internal hæmorrhage—which I attributed to a hæmolytic streptococcus. He got well without any operative procedures and is well 23 months later. At the time I had other cases with pulmonary infarction and nephritis which had followed on tonsillitis and influenza; none of these latter had otitis media.

Six months previously to seeing the above case I saw a woman who after influenza and tonsillitis had, like the man described above, nephritis and pulmonary infarction, but not otitis. Other cases of nephritis of similar nature were seen the same week; not one of these had otitis. Arthritis and empyema I have seen follow tonsillitis. Otitis media is such a common complication of these sore-throats that it is not to be wondered if one sometimes sees it in conjunction with the other complications as in the man described above. Mr. Owen says very little about the previous history of his patient; whether, as is highly probable, she had had tonsillitis. There is no mention as to whether a swab of the throat was taken.

The failure of the operative procedures adopted in Mr. Owen's case to stay the march of the blood infection is to be explained, not by the incompleteness of the operative measures, but by the probability that the germs were entering the circulation not via the mastoid but via the upper air passages—a region where, in these days of endemic influenza, many mysterious infections of the body have their origin.

I am, Sir, yours faithfully,

Aberdare, Jan. 7th, 1928. AMBROSE W. OWEN.

VESALIUS AND THE INQUISITION MYTH.

To the Editor of THE LANCET.

SIR,—In the very interesting lecture reported in THE LANCET of Nov. 12th, 1927, Sir Farquhar Buzzard raises many contentious issues. He commits himself to the statement that "Vesalius . . . was condemned by the Inquisition as a sorcerer." The phrase is introduced almost as an obiter dictum, something which everyone knows and need only be mentioned in passing. But what are the actual facts? The whole story stands or falls by a single document; an excerpt from a letter alleged to have been written by Herbert Languetus in Paris to Caspar Peucer in Wittenberg on Jan. 1st, 1565. This excerpt runs as follows :—

> There is a rumour that Vesalius is dead. No doubt you heard that he had gone on a journey to Jerusalem, but I have had a letter from Spain that the cause of his pilgrimage was of a remarkable nature. A Spanish grandee had been treated by him, and upon the death of the patient Vesalius, because of his uncertainty as to the nature of the malady, asked the relatives' permission to open the body. The request was granted, but on opening the body the heart was found to be still beating. Thereupon the relatives, not content with accusing him of murder, denounced him also to the Inquisition on the score of impiety, to the end that their vengeance might be more complete. Since the facts of the case were undisputed the mistake of the great physician could not easily be excused, and the Inquisition was so set on punishing him that the authority and even the prayers of the king could scarce avert the danger. At length, however, in deference to the supplications of the king and of the whole court, he was pardoned on condition that he should expiate his crime by making a pilgrimage to Jerusalem and Mount Sion.

Before considering the above excerpt a few dates will be useful. Vesalius left Madrid early in March, 1564. As he intended to live for the future in Brussels, his wife, family, and furniture accompanied him in

his overland journey to the north-eastern frontier of Spain. In the south of France he parted from the cavalcade, the rest passing on to Belgium while he directed his course to Venice, which he reached about the end of April. Early in May he sailed for the Holy Land. There is no information thereafter till the beginning of December, when some of his fellow pilgrims returning to Belgium brought word that he had died at Zante on Oct. 15th. It might well be, therefore, that the rumour of his death did not reach Paris till the end of December.

From all this, however, it will be evident that the facts alleged to have been written to Peucer must have happened at least nine months before. We may pass over obvious difficulties in the story; that Vesalius was not likely to mistake a living body for one that was dead; that even had he made the mistake the jurisdiction lay with the ordinary courts and not with the Inquisition. But accepting the story as it stands, its remarkable nature, the large number of persons who knew of it (the whole court at least), the unenviable reputation of the Inquisition itself—it is very difficult to understand that not a hint of the drama was heard till Jan. 1st, 1565, probably a year after its occurrence. It may, of course, be urged that the argument from silence is not very convincing, and that after all a year is not a long time. But the argument from silence does not depend in this case on one year, but on 56 years, for the story was not heard of till 1620, when the excerpt translated above was printed by Melchior Adam in his *Vitae Illustrium Medicorum*. This long silence is surely convincing even apart from the events that crowded that half century. Languetus was the representative of the Elector of Saxony, the head of Protestant Europe, to whom any tale against the Inquisition would be welcome. Languetus was a copious correspondent; volumes of his letters, diplomatic and private, have been published. There is one to Mordeisen on the very day (Jan. 1st, 1565), long and chatty, but neither in it or anywhere else is to be found Adam's excerpt, which was printed 39 years after his death. Peucer, too, was bound to have repeated the story if the excerpt ever reached him. After the death of his father-in-law, Melanchthon, he continued the latter's work as the centre of correspondence for the various Reformers, but to none of them did he re-tell the tale. The polemic of that period was fierce to a degree that few moderns can conceive. The Inquisition was loathed by Protestants, especially in the low countries, where the personal friends of Vesalius lived. His widow married again, and the brother of her second husband was a devoted partisan of William of Orange. The Inquisition in Spain courted publicity in regard to its punishments and was no respecter of persons; the Archbishop of Toledo, the Primate of Spain, was during this time its prisoner.

Nor was it that Vesalius had slipped out of public mind. Protestant Europe had ceased to believe in the efficacy of pilgrimages and so refused to think that others could act from such a motive. Thus, while it was agreed that a pilgrimage was the ostensible object of the journey, search was made for a hidden reason. So we find it variously stated: (1) that he wanted to study drugs in the East; (2) that he was tired of court life; (3) that in this way he anticipated his dismissal by Philip; (4) that it was to win a bet; (5) that it was to get away from a nagging wife, &c. None of these writers would have required to make a guess if they had heard about the Inquisition. The history of this tribunal has been told at length, and neither Llorente nor Lea can be said to be biased in its favour. Long lists of its real and supposed victims have been drawn out, but the name of Vesalius does not figure therein.

This long universal silence in regard to an event which from so many different points of view clamoured for record and comment can have only one explanation—viz., that it did not take place, and that the excerpt given by Adam is a forgery. It still finds its way into works of reference—e.g., the eleventh edition of the Encyclopædia Britannica—because these books usually copy from one another. It really owed its life to Boerhaave and Albinus, who gave it in their introduction to the Opera Omnia of Vesalius, published by them in 1725. The undoubted merit of this edition gained it widespread popularity, and so the story came to be generally accepted, especially perhaps because of the long and solemn comment they make on it, beginning—

Atque ita tandem dira sacerdotum tyrannis horribi mortis genere Virum sustulit, cui parem nulla tulerun secula, cujus memoriae grata assurget medicina, quamdi sibi curae erit sua cuique sanitas.

It is only fair to add that the most competen authorities on Vesalius—e.g., Burggraeve, Wauter and Roth—dismiss the story as fantastic.

I am, Sir, yours faithfully,

Edinburgh, Dec. 27th, 1927. G. MATHESON CULLEN.

THE PREVENTION OF DIPHTHERIA.

To the Editor of THE LANCET.

SIR,—During the year which has just passed rath more than 1800 cases have been sent into this hospit with a diagnosis of diphtheria. Admittedly, a co siderable proportion of the total were either exampl of other conditions or of so-called "bacteriologic diphtheria"—the diagnosis having been based up the result of a morphological examination of a cultu from a swab and not upon clinical evidence of t disease. With one exception the staff—medic officers, nurses, and maids—concerned in the trea ment of these 1800 cases was known to be immune i.e., Schick-negative to diphtheria. The members the staff had either been found to be Schick-negati on joining or had been rendered so by means toxoid-antitoxin before being allowed to work in about diphtheria wards. The exception, a marked Schick-positive medical officer, elected to "risk it —and contracted clinical diphtheria. Otherwi there has been no single case of diphtheria amon any section of the staff for the past 12 months. Dr. Burton points out in your issue of Jan. 7 the paper for which I was jointly responsible, and which Dr. Rowland alluded, closed, as it in fa opened, upon the note of active immunisation agai diphtheria. Tonsillectomy in the case of the carr of *virulent* diphtheria bacilli was advocated "u the active immunisation of non-immunes is adopted England upon an adequate scale."

I am, Sir, yours faithfully,

E. H. R. HARRIES,
Medical Superintendent, Birmingham City
Jan. 7th, 1928. Hospitals.

TENTERDEN PARATYPHOID EPIDEMIC.

To the Editor of THE LANCET.

SIR,—I have read with interest the leading art in your issue of Dec. 31st, 1927, upon the prevent of paratyphoid. Of the 53 cases notified in connex with the Tenterden epidemic, we found that 43 83 per cent.) had had milk from the creamery to wh the Watermill Farm supply was sold wholesale. fully agree with your remarks with regard to difficulty of obtaining a satisfactory water-sup at outlying farms, both of the quality and quan required for the scrupulous cleanliness which sho appertain to a good cowshed and dairy. The fa in question is an example, the owner cannot aff the cost of laying on company water to his farm has decided to give up milk production. This unfortunate, and shows the difficulty health offic are confronted with; when the Dairy and Cows Orders are strictly enforced the small farmer is dri out of the milk production business, and the alre too small supply of milk available for the consum is lessened. It is not always easy to condemn a at sight. In a village in the South-West Kent recently we had paratyphoid occur. The chem analysis of the well showed the water to be of "i organic quality." As company water was rea available I recommended that the well should

closed. The rural district council decided accordingly, but this decision was reversed by the magistrates on appeal from the parish council.

With regard to milk production, what regulations cannot accomplish education, we hope, will. In this county, clean milk competitions, which are organised by the Kent County education and agriculture committees conjointly, are proving very successful. Some small farmers who had almost been frightened out of the milk business by the new Government dairy regulations have now, after a course of instruction on clean milk production, decided to carry on. In several cases, in spite of somewhat primitive equipment and none too structurally satisfactory cowsheds, a milk of a high standard of cleanliness is being produced.

In your remarks on the Tenterden epidemic you do not comment on the necessity of early Widal tests being made upon cases of doubtful illness occurring on dairy farms. The patients at Watermill Farm had been seen by three medical practitioners and the agreed diagnosis was "bacillus coli infection." Though the first case was seen on July 5th it was not till August 11th, the second day of the epidemic, that Widal tests were taken by the medical attendant on the recommendation of the medical officer of health; all the tests were positive. We had stopped the milk-supply on August 10th.

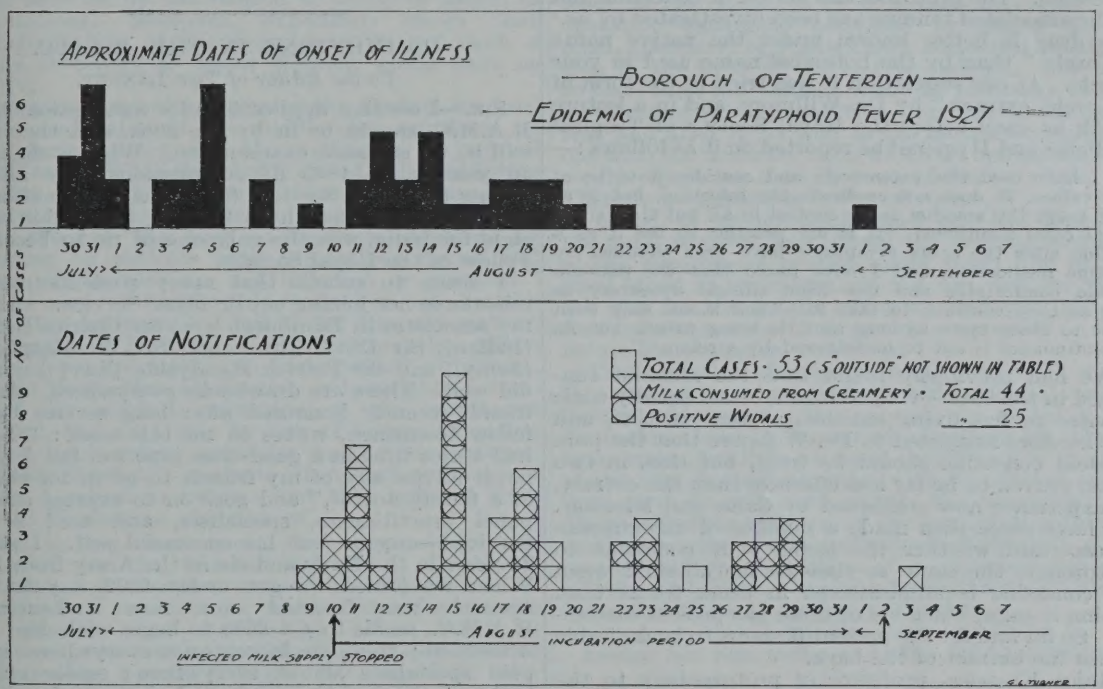
The conclusions I gave in my report upon the epidemic, together with the reproduction of the graph I had prepared, may be of interest. This shows very clearly how the cases ceased within the typhoid incubation period of 5 to 23 days from the date the milk-supply from the farm was stopped. An epidemic such as this makes one appreciate the ready facilities provided at the county laboratory by Dr. A. Greenwood. Previously I did not advocate the pasteurisation of milk because of the consequent lessening of the vitamin content. Now this epidemic has convinced me of the necessity of pasteurisation every time. I note that the large dairy combines, even with their careful methods of production, consider this a necessity; much more is it so in the case of the small producer and distributor.

It is satisfactory and greatly to the credit of the doctors and nurses dealing with the cases treated at home and in the hospitals that there were no fatal cases.

Three important lessons are to be learned from this epidemic:—

(1) I consider that, in view of the ever-present possibility of milk being a vehicle for the spread of infectious disease, medical practitioners should treat any illnesses occurring on dairy farms and premises with great care. In fact, it might be advisable to treat any cases of illness on such farms as infectious diseases until it is definitely proved that they are not. It is also advisable for doctors to make ready use of the facilities offered by the county laboratories.

(2) Whilst recognising the considerable advance made in the production and sale of milk with regard to cleanliness and handling, persons engaged in this business cannot be too careful. To obtain a perfect milk-supply is not a matter of palatial cowsheds, but is from first to last a matter of education in what one might describe as "surgical" cleanliness. Perhaps it is too ideal to expect the aseptic cleanliness of the hospital; nevertheless, if milk is to be considered safe for infants and invalids in particular, dairy and farm cleanliness must be of a much higher standard than it is at present.



An absolute essential of reasonable dairy cleanliness is, of course, a plentiful and pure water-supply. Meantime, in my opinion, the only safety lies in commercial, or failing that, domestic pasteurisation. I would just add that to destroy all organisms, including typhoid and tubercle bacilli, in milk, this should be retained at a temperature of not less than 145° and not more than 150° F. for at least half an hour, and be immediately cooled to a temperature of not more than 55° F. This means a little trouble, but better that than the great trouble and inconvenience, to say the least of it, of an epidemic such as has been experienced in the borough of Tenterden.

(3) A very important business matter arose in connexion with this epidemic, which resulted in the County Court case of "Clarke *v.* Jefferies," heard by Judge Moore Cann at Eastbourne. At this case the medical officer of health and the sanitary inspector were subpœnaed to attend and give evidence. It appears that Jefferies was negotiating for the sale of "Ye Olde Creamery" dairy business at Tenterden on August 7th, and that when the epidemic broke out on the 10th the purchaser refused to complete, and sued the vendor for the return of the deposit money. Apart from the public health standpoint, with which we only are concerned, no further comment is required to emphasise the necessity of all persons engaged in the production and distribution of milk taking every possible step in their commercial methods to prevent such an occurrence in the future.

As health officials we do not wish to discourage milk production, but the reverse; the people, and especially the children, do not drink enough milk.

We support the dairy trade's slogan, "Drink more milk," but it must be clean milk and guaranteed to be free of all contamination or infection.

I am, Sir, yours faithfully,

S. NICOL GALBRAITH,
Medical Officer of Health, S.W. Kent Health Area.

Tonbridge, Jan. 2nd, 1928.

AN INDIAN REMEDY AGAINST DYSENTERY.

To the Editor of THE LANCET.

SIR,—The information given in your annotation last week (p. 38) on an Indian remedy against dysentery can be usefully supplemented by experience of *Holarrhena antidysenterica* bark in this country. Burn[1] gave an account of the physiological action of conessine, holarrhenine, and oxyconessine, and Pyman[2] described the chemical properties of holarrhenine and conessine. The protozoocidal action of conessine and of the associated tannins has been investigated by us.[3] The drug is better known under the native name "Kurchi" than by the botanical name used in your article. At our suggestion it was tried in the form of "Kurchi extract" by Dr. Willmore, and in a lecture which he gave before the Royal Society of Tropical Medicine and Hygiene[4] he reported on it as follows:—

"I have used this extensively and consider it to be of real value. It does not eradicate the infection, but it at least keeps the amœbæ under control in all but the exceptional cases mentioned. It is my practice to use it as a routine after the acute symptoms have been subdued by emetine medication, and I have found that the patients remain comfortable and free from clinical dysentery as long as they continue to take it. Their stools may even cease to show cysts as long as it is being taken, but its discontinuance is apt to be followed by a relapse."

We had previously found that the alkaloid contained in the bark—viz., conessine—was equally toxic in vitro to free-living amœbæ, as was emetine, and we therefore suggested to Dr. Willmore that the pure alkaloid conessine should be tried, but this, in two cases, proved to be far less effective than the extract, an experience now confirmed by Caius and Mhaskar. We have since then made a number of experiments to ascertain whether the toxicity of conessine to protozoa is the same as that of the alkaloid when the conessine is administered in other forms than as simple salts, but none of these has proved successful. So far and for the present it seems to be desirable to use the extract of the bark.

Major Knowles, professor of protozoology to the Calcutta School of Tropical Medicine, who has done a great deal of work on this subject in India during the last two years, finds the extract satisfactory, and, as it can be administered in compressed form, it avoids the serious difficulties presented by the modes of administration suggested by the authorities quoted in your article, which involve the daily ingestion of several fluid ounces of a peculiarly nauseating decoction of the bark or a quarter of an ounce of an equally unpleasant dry powdered bark, methods perhaps possible with patients in the Middle Ages, but hardly feasible to-day, except perhaps with primitive peoples who like their medicine to taste "strong." Major Knowles, as the result of the treatment of two cases of amœbic dysentery with Kurchi extract in solid form, states[5] that in both cases the dose was tolerated very well, the amœbic infection appeared to be eradicated, and cure was apparently both rapid and complete. The same author[6] after several years' experience with this drug states: "On the other hand, it is doubtful whether emetine alone will ever entirely eradicate an infection with *E. histolytica*, and its use requires to be supplemented by the use of such a drug—e.g., as Kurchi."

[1] Jour. of Pharmacol., 1915, vi., 305.
[2] Trans. Chem. Soc., 1919, cxv., 163.
[3] Brit. Med. Jour., 1922, i., 993; Trans. Roy. Soc. Trop. Med. and Hyg., 1923, xvii., 61; and Trans. Roy. Soc. Trop. Med. and Hyg., 1924, xvii., 378.
[4] Trans. Roy. Soc. Trop. Med. and Hyg., 1923, xvii., 13.
[5] Ann. Report Calcutta School of Trop. Med., 1924, p. 70.
[6] An Introduction to Medical Protozoology, 1928, p. 93.

It is perhaps also of interest to mention that in a recent paper on the chemistry of conessine Dr. J. L. Simonsen mentions[7] that he had to give up work on the alkaloid owing to a severe attack of giant urticaria, probably caused by certain derivatives of the alkaloid. This appears to be the first recorded instance of the kind, although a considerable number of chemists have worked with conessine. It is, however, possible that the real cause of the attack in Dr. Simonsen's case was the methyl iodide, used in the process of "exhaustive methylation" which he applied to the alkaloid. Experience in these laboratories shows that some people possess skins highly susceptible to the action of methyl iodide.

We are, Sir, yours faithfully,

T. A. HENRY,
Director, Wellcome Chemical Research Laboratories.

H. C. BROWN,
Wellcome Bureau of Scientific Research

Jan. 9th, 1928.

COMMISSIONS IN THE R.A.M.C.

To the Editor of THE LANCET.

SIR,—I see that applications for commissions in the R.A.M.C. should be in by the 20th, and that there will be no entrance examination. What a change in 40 years! In 1885 64 commissions were allotted among the three Services (the same examination for all), and the sixteenth on the list, the junior of the eight for India, was the only one of us to become a Fellow of the Royal Society.

I desire to submit that many students make a mistake in not joining one or other Service. Among my associates in Edinburgh were Sir Charles Bedford (Indian), Sir David Bruce and Sir W. Macpherson (Army), and Sir Patrick Handyside (Navy), who all did well. There are drawbacks everywhere. An old friend, recently honoured after long service by his fellow townsmen, writes to me this week: "I have had a nice time in a good-class practice, but I would never advise any of my friends to go in for the life of a family doctor," and goes on to express envy of panel practitioners, specialists, and me! in the Service!—anyone but his successful self. I served 26 years in the Navy and six in the Army from 1916. When we joined we got under £200 a year, and research was frowned on; now a lieutenant, R.A.M.C., seems to get £500 to begin with, and £570 if married; there are laboratories everywhere, extra-paid specialists almost everywhere; senior officers, better trained and encouraged, have a far better position, while the juniors (the talk is this week of the R.A.M.C.) have the Millbank mess to stay in if they are in London on leave, where they meet other officers of the Corps, especially the research workers, and have the run of the fine library. I am glad to say a young officer told me recently he had joined the Corps because he had heard me lay out to the Royal Medical Society the advantages of the Services. They offer great fields for research to capable officers, especially the Indian Service which has so much disease to treat. Practice improves output in science as in games, so that Service has produced in my time Ross, Bedford, Bannerman, Freyer, Rogers, Carter, Elliott, McCarrison, to name a few, and though juniors regret some conditions, their difficulties will hamper less the tougher men. A temporary officer, like myself, in 1922 applied to join the R.A.M.C. "Why?" said his colonel. "Well," he said, "I suppose it is because I want to see the world on the cheap." Not a bad reason, but there are others.

One caution should be given. We joined with less than £200 a year and a promise, after 20 years, of a £365 pension; wealth it seemed beyond the dreams of avarice. They start at £500, still with only the same £365 ahead. They must save or else insure.

I am, Sir, yours faithfully,

W. E. HOME,
Fleet Surgeon, R.N., and Major, R.A.M.C.

Piccadilly, W., Jan. 7th, 1928.

[7] Jour. Chem. Soc., 1926, p. 2124.

AN OPERATION FOR THE ALLEVIATION OF DEAFNESS.

To the Editor of THE LANCET.

SIR,—Major Nesfield claims that the operation for the alleviation of deafness which he describes is not only simple but also satisfactory. The idea of opening up the middle ear by a new route in cases of severe Eustachian obstruction when the tube fails to function is by no means original. As an experimental procedure it was tried many years ago, by myself amongst others, with such discouraging results as to have long ago been abandoned. Apart from pathological considerations, the practical difficulty of maintaining a patent channel to the posterior end of the middle ear cleft is such that in the great majority of cases the middle ear proper becomes again shut off by contraction of tissue or fusion of granulations. Moreover, experience shows that epithelialisation of the bony tract is not such a simple procedure as Major Nesfield would have us believe.

The physiological function of the Eustachian tube is the ventilation of the middle ear, ventilated as it is during every act of swallowing in normal individuals. When chronically closed, this ventilating function is in abeyance with consequent damage to the contents of the tympanum. Major Nesfield states: "My attempt has been to alleviate deafness by operating on patients with normal ear drums and whose middle ears are not inflamed or purulent." Also he says: "I make this channel on ears healthy except for deafness." I fail to see how any patient with marked Eustachian obstruction, the raison d'être of his operation, can have normal ear drums. Chronic Eustachian obstruction is invariably accompanied by marked retraction of the membrana tympani, and as a rule by loss of lustre, alteration of the light reflex, ossicular and other changes. If Major Nesfield's patients then had normal ear drums, I refuse to believe that they suffered from chronic Eustachian obstruction.

Nor, in my experience, does any middle ear, subjected to the baneful influences of chronic Eustachian obstruction, escape the consequences of inflammatory reaction, as ocular inspection reveals and clinical tests demonstrate. How such an operative procedure as described by Major Nesfield can possibly benefit patients suffering from otosclerosis, a disease of the labyrinthine segment of the ear, and where the Eustachian tube is as a rule somewhat dilated, I also fail to understand. All recognised authority is, and for long has been, against operative procedures in this particular type of deafness. It seems to me incredible that any child of the age of 4 years should require such drastic interference.—I am, Sir, yours faithfully,

Manchester, Jan. 10th, 1928. WILLIAM MILLIGAN.

To the Editor of THE LANCET.

SIR,—I agree with Major Nesfield's remarks in your last issue, where he points the distinction between the operation he advises for the alleviation of deafness in non-suppurative ear disease and that advocated by Mr. Charles Heath for aural suppuration; the latter's panegyric on his results is therefore out of place in this discussion. While Mr. Nesfield states that the best results are obtained by this operation where the deafness is due to blocking of the Eustachian tubes with indrawn ear-drums, he also mentions that he has operated on many cases of otosclerosis. The pathology of these two conditions is entirely distinct, and it is difficult to understand in what way opening the antrum can benefit otosclerosis. If progress is to be made with any method of treatment, it is essential that the various types of deafness be carefully differentiated beforehand. Dr. Hill's suggestion that Mr. Nesfield should endeavour to obtain the collaboration of an experienced otologist is a good one.

That Mr. Nesfield finds it difficult to keep open the communication between the antrum and the external auditory meatus is shown by the fact that, in the only three patients I have examined after he had operated, this was closed, not by a thin membrane, but by a thick layer of tissue, the only indication that an opening had been made being a slight depression on the posterior meatal wall.

I am, Sir, yours faithfully,

London, W., Jan. 6th, 1928. HAROLD BARWELL.

To the Editor of THE LANCET.

SIR,—Those whose views have got stabilised as the result of prolonged experience have to beware lest they get fossilised, and they do well to give a patient and, primarily, a favourable consideration to any new methods, however opposed they may seem, at first sight, to those already in vogue. The operative treatment described by Major Nesfield must, therefore, be studied with respectful consideration in the light of the results claimed. For these to have their full value it would be necessary to have a statement of the condition previous to the operation and after it, as well as the ultimate results, set out with the accuracy with which an ophthalmologist would report the data in cases of disease of the eye. There is no objection to the intrusion, if such it can be called, of an ophthalmologist into the domain of the aural surgeon, and indeed the delicate technique of the experienced oculist would stand him in very good stead in operating on the ear, but we would ask him for the details which an otologist, bringing forward a new operation, would be expected to place before his otological confrères.

The formation of a fistula in the bony back wall of the meatus is a proceeding which should not be lightly undertaken. It can only be called a new Eustachian tube in respect of admitting air into the tympanum, but it has none of the protective qualities of the true Eustachian tube, with its ciliated epithelium and its advanced guard, the nasal passages. There is further a chance of the immigration into the mastoid cavity of the epithelium of the skin of the meatus and the formation of a cholesteatoma with all its possibilities. Looking forward with interest to the publication of further particulars,

I am, Sir, yours faithfully,

London, Jan. 10th, 1928. JAMES DUNDAS-GRANT.

To the Editor of THE LANCET.

SIR,—I am astonished that the very interesting article by Major Nesfield has attracted so little attention. Now that a claim is made that by a simple routine operation these hopeless cases of chronic deafness can be cured, the claimant must not be surprised if he meets with blank incredulity, which can only be removed by the exhibition of patients or by the publishing of detailed figures "before and after." The recent book by Dr. Cathcart on the Electrophonoïde is a model in this respect, as a complete table of figures is given. My own experiments in this direction have not had the results claimed by Major Nesfield, but many attempts must have been made by others, and further information would be useful to those who think that the permanent ventilation of the middle ear either via tympanic membrane or antrum will ultimately solve the problem of chronic middle-ear deafness.

I am, Sir, yours faithfully,

Manchester, Jan. 9th, 1928. WILLIAM WILSON.

CONFERENCE ON SILICOSIS.—Mr. H. B. Butler, deputy director of the International Bureau at Geneva, in a recent address at Pretoria, said that there was reason to hope that a conference on silicosis would in the near future be held in Johannesburg. Supporting his proposal, Sir Spencer Lister, director of the South African Institute for Medical Research, said that in no place in the world was silicosis more prevalent than in Johannesburg, and nowhere was there so efficient an organisation for treating the disease.

Obituary.

ALEXANDER CAMERON MILLER, M.D., F.R.S. EDIN.

Alexander Cameron Miller, of Fort William, whose death occurred on the last day of the old year, was one of the most distinguished practitioners in Scotland; he was both a great rural doctor and a great public servant. Born at Fort William in 1861, he graduated M.B., C.M., at Edinburgh University in 1883, proceeding to the M.D. (with honours) in 1888. For over forty years he carried on practice from the centre in his native town over a large Highland area, where mountains and lochs were permanent obstacles to travel, while flooded rivers were more than occasional. He was poor-law medical officer for the parishes of Ardgour and Kilmallie, and for part of Kilmonivaig; the difficulties of the medical life with patients separated in glens by distances rising to 50 miles and more can be surmised even by those with no personal knowledge, and one of the most romantic documents in connexion with medical practice ever indited was Miller's account of how, to attend two isolated patients, he crossed the flooded river Spean in a bath—the only method of transit. He was also medical officer of health for Fort William and for the county district of Lochaber, and was from the foundation medical superintendent and surgeon of the Belford Hospital, an institution of some twenty beds. With a large private practice he was widely recognised as a consultant. On the public health and poor-law side he was well known for the reliability of his work to three central authorities in succession—the Board of Supervision, the Local Government Board for Scotland, which superseded that Board in 1894, and to the Scottish Board of Health, which in 1919 incorporated in one the Local Government Board and the Scottish Insurance Commission.

With the passage of the National Insurance Acts his work became even harder. In 1912 he was made a member of the departmental committee (the Dewar Committee) set up by Mr. Lloyd George to inquire into medical service, including nursing, in the Highlands and Islands, with Sir John Dewar, now Lord Forteviot, as chairman. The report of this body is one of the most important documents in Scottish medical history, and Miller impressed all the workers on it by his professional insight and range of his knowledge. His work on the Dewar Committee was of the highest value; for he had an unsurpassed knowledge of all the medical problems in the district, and the Board owed much to his sagacity at the discussions. The Scottish Board of Health appointed him to the Highlands and Islands Consultative Council, where his widely based judgments always carried weight.

He was a natural scholar, at home in Gaelic, and having travelled much on the continent knew two foreign languages well, while maintaining his interest in classical literature. He wrote, as might be expected, thoroughly well; his private letters were often long and brilliant, and to the Carnegie U.K. report on "Scottish Mothers and Children" he contributed a "regional study" that will remain one of the classical social accounts of a Scottish medical practice for a period of 30 years, for he showed system in his records and elegance in literary expression.

For his war services he earned prompt promotion to a lieutenant-colonelcy, and here again his genial qualities and intimate knowledge of men served him well. For it is not given to everyone, however kind and sympathetic, to identify himself in the way that Miller could with his humbler fellow-men. "Once, in Harris," an intimate friend of Miller writes to us, "I heard him in a weaver's 'black-house' sustain his part in a spinning song, the spinners and he responding to each other perfectly and with similar artistic feeling." Such men make good recruiting officers as well as good colonels and good doctors.

The funeral, which took place at Fort William on Jan. 4th, was one of the largest ever witnessed at Lochaber; the cortège extended the whole length of the street, and was made up of official representatives and social magnates, who mingled with farmers, crofters, and shepherds from distant glens assembled to do honour to a dead friend.

Medical News.

UNIVERSITY OF LONDON.—At recent examinations the following candidates were successful:—

M.D.

Branch I., Medicine.—Enid A. Ceiriog-Cadle, London Sch. of Med. for Women; Gwendolen C. Cotton, London Sch. of Med. for Women; William Evans, London Hosp.; Una C. Garvin, London Sch. of Med. for Women; Alice M. C. Macpherson, London Sch. of Med. for Women; Alan C. T. Perkins, King's College Hosp.; Evelyn N. Popper, London Sch. of Med. for Women; Thomas W. Preston, King's College Hosp.; William G. Sears, Guy's Hosp.; Harvie K. Snell, King's College Hosp.

Branch III., Psychological Medicine.—Isaac Atkin, St. Bart.'s Hosp.; Florence M. Gamble, London Sch. of Med. for Women.

Branch IV., Midwifery and Diseases of Women.—Richard A. Brews, London Hosp.; Dorothea A. C. Hunt, London Sch. of Med. for Women; R. G. Maliphant, University College Hosp.

University College.—A course of five public lectures by Dr. R. J. Ludford on Cytology in Relation to Physiological Processes will be given on Jan. 19th and 26th, and Feb. 2nd, 9th, and 16th, at 5.30 P.M.—A course of ten lectures on Comparative Physiology, to be given by Mr. C. F. A. Pantin, will begin to-day (Friday), Jan. 13th, at 5 P.M., and continue at the same hour on Fridays until March 16th.—Prof. A. V. Hill, F.R.S., will give six lectures on Muscle, at 4 P.M. on Wednesdays, from Jan. 18th to Feb. 22nd inclusive.

King's College.—At 5 P.M. on Tuesdays, from Jan. 17th to March 6th, inclusive, Mr. J. A. Hewitt, D.Sc., will lecture on Integration in the Nervous System.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—The following lectures have been arranged: Jan. 16th, 18th, 20th, 23rd, 25th, 27th, Prof. Sir Arthur Keith on Factors Concerned in the Growth of the Human Body; Jan. 30th, Mr. W. E. M. Wardill on Certain Aspects of Cleft Palate, with Observations on the Causes of Defective Speech and the Remedies proposed for their Treatment; Feb. 1st, Mr. H. S. Souttar on New Methods of Surgical Access to the Brain; Feb. 3rd, Mr. E. Miles Atkinson on the Pathology, Diagnosis, and Treatment of Abscess of the Brain; Feb. 6th, Sir Percy Sargent on the Surgery of the Posterior Cranial Fossa; Feb. 8th, Prof. G. Grey Turner on the Treatment of Congenital Defects of the Bladder and Urethra by implantation of the Ureters into the Bowel, with a record of 14 personal cases; Feb. 10th, Dr. J. H. Sheldon on an Undescribed Disease of Bone; Feb. 13th, Dr. Adolphe Abrahams on the Physiology of Violent Exercise in relation to the Possibility of Strain; Feb. 15th, Mr. Alexander Fleming on Lysozyme, a Bacteriolytic Ferment normally present in Tissues and Secretions; Feb. 17th, Miss Ida C. Mann on the Regional Differentiation of the Vertebrate Retina; Feb. 20th, Mr. C. E. Shattock on Pathological Specimens in the Museum; Feb. 22nd, Mr. C. P. G. Wakeley on Investigations into the Surgical Diseases of the Salivary Glands, including their Pathology and Treatment; Feb. 24th, Dr. W. D. Newcomb on the Relationship between Peptic Ulceration and Gastric Carcinoma.

BETHLEM ROYAL HOSPITAL.—A course of lectures and practical instruction for the Diploma in Psychological Medicine of various universities will be given at this hospital, beginning on Jan. 16th. Particulars may be had from the Physician-Superintendent.

LANCASTER ISOLATION HOSPITAL.—During the flood on the night of Oct. 28th last this hospital was partly submerged, and three sanatorium patients were drowned in their beds. Lancaster town council is now applying to the Ministry of Health for permission to erect a new isolation hospital on a better site, and it is hoped that the Lancashire County Council, Morecambe corporation, and the district councils of Carnforth and Lunesdale will contribute to the cost of a central scheme. It is proposed to include a block of buildings capable of accommodating 30 patients for use as a tuberculosis sanatorium by the county council.

ORDER OF ST. JOHN OF JERUSALEM.—Among recent appointments to the Order of the Hospital of St. John of Jerusalem are the following:—Commanders: Major-General John Taylor Fotheringham, Colonel Sir Edward Newbury Thornton, and Colonel Charles Pye Oliver. Officers: Dr. Wilfred Vincent Miller Koch, Mr. Harold Branson Butler, M.B.E., Sir John Atkins, and Dr. James Carter Ogilvie.

DONATIONS AND BEQUESTS.—Mr. John Whewell Simpson, of Fieldside, Keswick, Cumberland, late of Royton, Lancashire, has bequeathed £40,000 to the Manchester Royal Infirmary and £1000 each to Dr. Barnardo's Homes, and to St. Dunstan's Hostel for Blinded Sailors and Soldiers. The bequest to the Manchester Infirmary is the largest ever made to this institution.—Mr. Alfred Cockerill, of Abington, Northampton, left £1000 to Northampton General Hospital, as a "Cockerill Bequest" for or towards the upkeep of a bed there; £750 to the Manfield Orthopædic Hospital, and £500 to the Home for Incurables, Leamington.

BRITISH EMPIRE CANCER CAMPAIGN.—At a quarterly meeting of the Grand Council held on Jan. 10th it was announced that a trust fund had been created by the executors of the late Mr. William Johnston, of Liverpool, to be known as the Aileen Congreve Memorial Fund. Of more than £18,000 available £16,000 will become a permanent trust, whose interest will be used for cancer research in Liverpool. It was also stated that an anonymous donation of £10,000 had been received by the campaign, and that the interest on this would be available for general research work. The sum of £3000 was granted for maintenance of the cancer research laboratories of the Middlesex Hospital, and a further sum of £900 for the year's maintenance of the special radiological research department there. A grant of £600 to the Cancer Research Committee of the London Association of the Medical Women's Federation was renewed for the ensuing year. An announcement was made about the International Convention on Cancer Research to be held in London in July. Particulars of this will be found in an editorial column.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—On Monday, Jan. 16th, at 5 P.M., at the rooms of the Medical Society of London, 11, Chandos-street, Cavendish-square, Sir James Purves-Stewart will lecture on Acute Drunkenness. On Thursday, Jan. 19th, at 3 P.M., at the Royal Eye Hospital, St. George's-circus, Mr. Letchworth will give a clinical demonstration. The lecture and the demonstration are open to members of the medical profession without fee. The following week there will be a lecture and surgical, medical, and ophthalmic demonstrations. A special course in cardiology will be given at the National Hospital for Diseases of the Heart, Westmoreland-street, commencing on Monday, Jan. 16th, for a fortnight, from 10 A.M. to 4 P.M (entries limited to 20). A course of eight lecture-demonstrations on Psychological Medicine will be given at the Bethlem Royal Hospital, on Tuesdays and Saturdays, at 11 A.M., commencing on Jan. 17th. During February, for a fortnight, a whole-day course in Diseases of Children will be held at the Paddington Green Children's Hospital and the Victoria Hospital for Children; during the afternoons and evenings, for four weeks, a course in Venereal Diseases will be held at the London Lock Hospital. A course in dermatology will be held every afternoon from Jan. 30th to Feb. 25th, at the St. John's Hospital (practical pathological demonstrations can also be arranged). From Feb. 20th to March 3rd, at the Queen Mary's Hospital, Stratford, a whole-day course will be given in medicine, surgery, and the specialties, consisting of work in the various departments of the hospital. From Jan. 30th to March 23rd, at the National Hospital, Queen-square, a course in Neurology will be given, consisting of clinical and pathological lectures and demonstrations, teaching in the out-patient department, lectures on the anatomy and physiology of the nervous system, and demonstrations on methods of clinical diagnosis in diseases of the nervous system. Information, syllabuses, tickets, and copies of the *Post-Graduate Medical Journal* may be had from the Secretary of the Fellowship, at 1, Wimpole-street, W.

THE LANCET: SUBSCRIPTION RATES.

INLAND	One Year	£2 2 0
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	Six Months	1 5 0
	Three Months	0 12 6

Medical Diary.

SOCIETIES.

ROYAL SOCIETY, Albemarle-street, W.

THURSDAY, Jan. 19th.—4.30 P.M. *The following papers, among others, will be read:* P.H.H. Gray: Formation of Indigotin from Indol by Soil Bacteria. (Communicated by Sir John Russell.) R. A. Fisher: Triplet Children in Great Britain and Ireland. (Communicated by Sir Arthur Keith.) *The following papers will be read in title only:* J. Piiper: On the Evolution of the Vertebral Column in Birds illustrated by its Development in Struthio and Larus. (Communicated by E. W. MacBride.) F. G. Gregory and A. S. Hornè: A Quantitative Study of the Course of Fungal Invasion of the Apple Fruit and its Bearing on the Nature of Disease Resistance. Parts I. and II., and the Differential Effect of the Ions of Three-salt Solutions on the Growth of Potato Plants in Sand Culture. (Communicated by V. H. Blackman.) Sir Kenneth Goadby: Bacterial Proteins. L. Rapkine and R. Wurmser: On Intracellular Oxidation-Reduction Potential. (Communicated by Sir F. Hopkins.) F. W. R. Brambell: Development and Morphology of the Gonads of the Mouse. Part II. (Communicated by J. P. Hill.) R. C. Punnett: Linkage Groups and Chromosome number in *Lathyrus*.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MONDAY, Jan. 16th.—LIBRARY: The main library will close at 5 P.M., but readers will be accommodated in other rooms until 6.30 P.M. 8.30 P.M., SOCIAL EVENING. From 8.30 to 9 P.M. Fellows and guests will be received in the Library by the President and Lady Berry. At 9.15 P.M. Dr. Jane Walker will give an address entitled Saints, Medicine, and Surgery (with illustrations). A number of exhibits, kindly lent by the Wellcome Historical Medical Museum and by Miss Marie Leon will be on view. Music and light refreshments.

TUESDAY.—5.30 P.M., GENERAL MEETING OF FELLOWS. Ballot for election to the Fellowship. 8.30 P.M., PATHOLOGY. Papers, &c.: Prof. J. McIntosh: The Histology of Some Virus Infections of the Central Nervous System. Mr. A. Fleming: The Influence of Temperature on the Agglutination of Bacteria. Dr. F. T. Ridley: A New Mixing Machine.

THURSDAY.—5 P.M., DERMATOLOGY. (Cases at 4 P.M.) 8 P.M., OBSTETRICS. Specimen: Mr. W. Gilliatt: Sarcoma of the Uterus. Short Communication: Prof. J. B. Cleland (University of Adelaide): Difficult Labour in a Pure-blooded Australian Aboriginal Woman. Paper: Mr. G. F. Gibberd: A Consideration of the Results of Albuminuria Occurring during Pregnancy with Special Reference to the Relationship between Pregnancy, Kidney, and Chronic Nephritis. 8.30 P.M., ELECTRO-THERAPEUTICS. Discussion on Diathermy in Relation to Circulatory Disturbances, Particularly in High Blood Pressure, &c. Openers: Prof. Sidney Russ and Dr. T. F. Cotton. Dr. Justina Wilson, Dr. Agnes Savill, and others will also speak.

HUNTERIAN SOCIETY.

MONDAY, Jan. 16th.—9 P.M. (at the Mansion House). Dr. Howard Kelly of Baltimore, U.S.A.: Rubbing and Reasoning.

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE, 11, Chandos-street, Cavendish-square, W.

THURSDAY, Jan. 19th.—8.15 P.M., preceded at 7.45 P.M. by a demonstration, Surgeon-Commander D. H. C. Given, R.N.: Health Organisation on H.M. Naval Base, Singapore, and Results, with comments on the Practice of Preventive Medicine seen during Tours in the Far East (illustrated by lantern slides).

SOCIETY OF MEDICAL OFFICERS OF HEALTH, 1, Upper Montague-street, Russell-square, W.

FRIDAY, Jan. 20th.—5 P.M., Dr. Walter Elliot, M.P., and Prof. R. H. A. Plimmer, D.Sc., on Recent Advances in the Knowledge of Food.

EUGENICS SOCIETY.

THURSDAY, Jan. 19th.—8.30 P.M. (at the Rooms of the Royal Society, Burlington House, W.). Mr. F. C. Bartlett: Innate Qualities in Social Classes. Discussion.

SOCIETY OF SUPERINTENDENTS OF TUBERCULOSIS INSTITUTIONS.

FRIDAY, Jan. 20th.—3 P.M. (at 122, Harley-street, London, W.), annual general meeting. Discussion on Pros and Cons of Tuberculosis Propaganda, to be opened by Dr. W. Brand.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, Jan. 16th, to SATURDAY, Jan. 21st.—FELLOWSHIP OF MEDICINE. Lecture at Medical Society, 11, Chandos-street, Cavendish-square, W. Mon., at 5 P.M., Sir James Purves-Stewart, K.C.M.G.: Acute Drunkenness. —ROYAL EYE HOSPITAL, St. George's Circus, S.E. Clinical demonstration on Thurs., at 3 P.M., by Mr. Letchworth. The above lecture and demonstration are open to members of the medical profession, without

fee.—BETHLEM ROYAL HOSPITAL, St. George's Fields, S.E. Course in Psychological Medicine. Lecture-demonstrations on Tues. and Sat. at 11 A.M.—CHILDREN'S CLINIC and other hospitals. Post-graduate course in Diseases of Children, occupying mornings and some afternoons. (Second week.)

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, W.
MONDAY, Jan. 16th.—10 A.M., Dr. Dowling: Skin Department. 11 A.M., Mr. Tyrrell Gray: Surgical Wards. 2 P.M., Dr. Trevor Davies: Gynæcological Department. 4.30 P.M., Dr. Carmichael Low: Sprue (lecture).
TUESDAY.—2 P.M., Dr. Shaw: Medical Out-patients. 2 P.M., Mr. Sinclair: Surgical Out-patients.
WEDNESDAY.—10 A.M., Dr. Burnford: Medical Wards. 2.30 P.M., Mr. Donald Armour: Surgical Wards.
THURSDAY.—10 A.M., Dr. Grainger Stewart: Neurological Department. 2 P.M., Mr. MacDonald: Genito-urinary Department. 2 P.M., Mr. Bishop Harman: Eye Department.
FRIDAY.—10 A.M., Dr. Pritchard: Special Medical Treatment Clinic. 2 P.M., Mr. Vlasto: Throat, Nose and Ear Department. 4.30 P.M., Dr. Archer: Chemical Examination of Blood (lecture-demonstration).
SATURDAY.—10 A.M., Dr. Burnford: Bacterial Therapy. 10 A.M., Dr. Owen: Medical Diseases of Children.
Medical and Surgical Out-patients, Operations, Special Departments, daily, 10 A.M. to 5 P.M., Saturdays, 10 A.M. to 1 P.M.

NORTH-EAST LONDON POST-GRADUATE COLLEGE Prince of Wales's General Hospital, Tottenham.
MONDAY, Jan. 16th.—2.30 to 5 P.M., Medical, Surgical, and Gynæcological Clinics. Operations.
TUESDAY.—2.30 to 5 P.M., Medical, Surgical, Throat, Nose and Ear Clinics. Operations.
WEDNESDAY.—2.30 to 5 P.M., Medical, Skin, and Eye Clinics. Operations.
THURSDAY.—11.30 A.M., Dental Clinics. 2.30 to 5 P.M., Medical, Surgical, and Ear, Nose and Throat Clinics. Operations.
FRIDAY.—10.30 A.M., Throat, Nose and Ear Clinics. 2.30 to 5 P.M., Surgical, Medical, and Children's Diseases Clinics. Operations.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.
TUESDAY, Jan. 17th.—5 P.M., Dr. H. G. Adamson: Erythema Multiforme.
THURSDAY.—5 P.M., Pathology Demonstration.

CENTRAL LONDON THROAT, NOSE AND EAR HOSPITAL, Grays' Inn-road, W.C.
MONDAY, Jan. 16th.—1.30 P.M., Mr. R. J. Cann: Hearing Tests.
WEDNESDAY.—1.30 P.M., Mr. N. MacKeith: Examination of the Ear.

ROYAL NORTHERN HOSPITAL, Holloway-road, N.
TUESDAY, Jan. 17th.—3.15 P.M., Sir William Willcox: The Clinical Manifestations of Parenteric Infections.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.
THURSDAY, Jan. 19th.—4 P.M., Dr. D. Paterson: Digestive Disturbances in Infancy and Their Treatment.

ROYAL INSTITUTE OF PUBLIC HEALTH, 37, Russell-square, W.C.
WEDNESDAY, Jan. 18th.—4.30 P.M., Mr. Rowland Burrows: The Medical Practitioner in Relation to the Administration of Justice.

ST. MARY'S HOSPITALS, MANCHESTER, Whitworth-street West Branch.
FRIDAY, Jan. 20th.—4.30 P.M., Dr. F. H. Lacey: Abortion: Its Prevention and Treatment.

Appointments.

ROBB, J. J., M.B., Ch.B. Edin., F.R.C.S.Edin., has been appointed Surgeon Consultant, Gilbert Bain Hospital, Lerwick.

TIPPETT, G. O., M.B., B.S. Lond., M.R.C.S., Resident Surgical Officer, Wingfield Orthopædic Hospital, Oxford.

Westminster Hospital: SEGAL, S., L.R.C.P. Lond., M.R.C.S., Resident House Physician; ROBOTTOM, P. M., L.R.C.P. Lond., M.R.C.S., and SOUTTER, P. A. M., L.R.C.P. Lond., M.R.C.S., Resident House Surgeons.

Certifying Surgeons under the Factory and Workshop Acts: EDWARDS, L. C. J., L.R.C.P. Lond., M.R.C.S. (Braintree); OLIVER, C. P., Jun., M.B., B.Chir. Camb. (Maidstone); DAVIES, R. W., L.R.C.P. Lond., M.R.C.S. (Rushden); and WARNER, C. H., M.D., B.S. Lond., D.P.H. (Southwell, Notts.).

Vacancies.

For further information refer to the advertisement columns.

Barnsley, Beckett Hospital.—Two Hon S.'s for Out-patients. Also Hon. Asst. Ophth. S.

Bethnal Green Hospital, E.—Asst. M.O. £350.

Birmingham City.—Sen. Asst. M.O.H. £1100.

Blyth, Borough of.—M.O.H., &c. £800.

Brighton, New Sussex Hospital for Women and Children, Windlesham-road.—Hon. Radiologist and Hon. Surg. to Ear, Nose and Throat Dept.

Bristol Royal Hospital for Sick Children and Women.—H.P. £125.

Central London Ophthalmic Hospital, Judd-street, W.C.—Two Out-patient Officers. Each £150. Also Jun. H.S. At rate of £50.

City of London Hospital for Diseases of the Heart, Victoria Park, E.—P. to Out-patients.

Colchester, Essex County Hospital.—H.S. £150–£200.

Coventry, City of.—Deputy M.O. £750.

Croydon County Borough.—Asst. M.O.H., &c. £600.

Durham, Earl's House Sanatorium for Boys.—M.O. £450.

Evelina Hospital for Children, Southwark, S.E.—H.P. £120.

Freemasons' Hospital and Nursing Home, 237, Fulham-road, S.W.—Res. M.O. At rate of £250.

Hospital for Tropical Diseases, Endsleigh-gardens, W.C.—Hon. Asst. P.

Liverpool, Royal Children's Hospital, Heswall Branch.—Res. M.O. At rate of £120.

Liverpool, Royal Children's Hospital, City Branch, Myrtle-street.—Two Res. H.P.'s and two Res. H.S.'s. Each at rate of £60.

London Female Lock Hospital, 283, Harrow-road, W.—2nd H.S. At rate of £150.

London School of Hygiene and Tropical Medicine.—University Chair of Public Health. £1300.

Manchester, Ancoats Hospital.—Res. M.O. £150.

Manchester, Ministry of Pensions Hospital, Grangethorpe.—Jun. M.O. £300.

Manchester Royal Infirmary.—Asst. M.O. £35.

Margaret-street Hospital for Consumption, 26, Margaret-street, W.—Hon. Urological S.

Margate, Royal Sea Bathing Hospital for Surgical Tuberculosis.—Two H.S.'s. Each at rate of £200.

Metropolitan Hospital, Kingsland-road, E.—Ophth. S.

Midlothian, West Lothian and Peebles Counties.—M.O.H. £900.

Mildmay Mission Hospital, Austin-street, Bethnal Green, E.—Jun. Res. M.O. £100.

Norwich City.—Clinical Tuberculosis Officer, &c. £750.

Nottingham Children's Hospital.—Res. H.S. At rate of £150.

Oxford, Radcliffe Infirmary and County Hospital.—Hon. Asst. Orthopædic Surg.

Oxford, Wingfield Orthopædic Hospital, Headington.—Asst.S. £600.

Peckham House Mental Hospital, 112, Peckham-road, S.E.—Jun. Asst M.O. £250.

Portsmouth City Mental Hospital.—2nd Asst. M.O. £525.

Portsmouth Royal Hospital.—Cas. O. At rate of £100.

Portsmouth, St. Mary's Infirmary Institution and Children's Home.—3rd Asst. Res. M.O. £250.

Preston, Royal Infirmary.—H S. £150.

Royal Army Medical Corps.—Commissions.

Royal Naval Medical Service.—Twenty Commissions.

Royal Society, Burlington House, W.—Second Foulerton Research Professor. £1400.

Royal Waterloo Hospital for Children and Women. Waterloo-road, S.E.—Non-res. Cas. O. £150.

St. Albans, Hill End Mental Hospital.—2nd Asst. M.O. £450.

St. John's Hospital, Lewisham, S.E.—Cas. O. At rate of £100.

Salford, City of.—Venereal Disease M.O. £750.

Sheffield Royal Hospital.—Res. Anæsthetist. At rate of £80.

Stepney Parish.—Pathologist and Bacteriologist. £450.

Stoke-on-Trent, North Staffordshire Royal Infirmary.—H.S. £150.

Taunton and Somerset Hospital.—Sen. and Jun. House M.O.'s. At rate of £150 and £100 respectively.

Wakefield City Public Health Dept.—Asst. M.O. £600.

Wellcome Bureau of Scientific Research, 26, Endsleigh-gardens, W.C.—Asst. Bacteriologist.

West End Hospital for Nervous Diseases, Gloucester Gate, Regent's Park, N.W.—Sen. H.P. At rate of £150.

Willesden Urban District Council.—Asst. M.O. £600.

The Secretary of State for the Home Department announces a vacancy for an additional Medical Referee under the Workmen's Compensation Act, for the districts of the Bath, Calne, Chippenham, Devizes, Frome, Hungerford, Malmesbury, Marlborough, Melksham, Newbury, Swindon, Trowbridge and Warminster County Courts. Applications should reach the Private Secretary, Home Office, not later than Jan. 31st.

The Chief Inspector of Factories announces vacant appointments for Certifying Factory Surgeons at Kilwinning (Ayrshire) and Kirkby Lonsdale (Westmorland).

Births, Marriages, and Deaths.

BIRTHS.

BUTLER.—On Jan. 3rd, the wife of Dr. M. F. Butler, High-street, Penge, of a daughter.

GILBERTSON.—On Dec. 31st, 1927, at Bancroft, Hitchin, Herts, the wife of Dr. H. Marshall Gilbertson, of a daughter.

LANE.—On Jan. 1st, at Malta, the wife of Major J. W. Lane, R.A.M.C., of a son.

ROBINSON.—On Dec. 24th, 1927, at a nursing home, Salisbury, the wife of Major T. T. H. Robinson, D.S.O., R.A.M.C., of a son.

WEBSTER.—At 1, Carden-terrace, Aberdeen, on New Year's Day, 1928, to Grace, wife of A. U. Webster, M.C., M.A., M.B., Fraserburgh—a son.

DEATHS.

HODGKINSON.—On Jan. 6th, at Bradshaigh, Farnham, Surrey, Dr. Alexander Hodgkinson, formerly of Wilmslow, Cheshire.

MAHER.—On Jan. 7th, after an operation, Major-General Sir James Mayer, K.C.M.G., C.B., late R.A.M.C., of "Moorings," Boundary-road, Worthing.

STURGES.—On Nov. 12th, at Ballarat, Australia, Frank Sturges, L.R.C.P., formerly of Beckenham, aged 66.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

RECIPES FOR LIVER DIET.

THE thought of consuming large quantities of liver, as prescribed in the Minot-Murphy diet for anæmia, does not by any means commend itself to the average patient. There are, however, various ways in which it may be served without seeming monotonous or unappetising. The *Journal of the American Medical Association* on Oct. 15th published a series of recipes for cooking liver taken from French and English sources, of which we quote the following as offering perhaps the most tasty dish :—

Ingredients.—1 lb. of calf's liver ; 3 tablespoonsful of grated bread crumbs ; 4 large mushrooms, chopped ; 2 sprigs of parsley finely chopped ; 1 medium-sized onion finely chopped ; ½ teaspoonful of salt and a pinch of pepper. *Method.*—Cut the liver into slices ½ inch thick, and sprinkle each slice with the mixture of bread crumbs, mushrooms, and seasonings ; put in a casserole, pour over it ½ pint of cold water or good soup stock, and bake in a slow oven for three-quarters of an hour.

Further suggestions may be found in a booklet by Florence Irwin. (Belfast : Printed by the Northern Whig, Ltd., Bridge-street. Pp. 12. Price 1*s.*, or 1*s.* 1½*d.* post free.) In the Minot-Murphy dietary she says mammalian liver is recommended, but chicken's liver and lamb's kidney may be substituted for a change ; rabbit's liver should prove milder in flavour than that of pig, sheep, or ox, but pig's liver is also mild. The liver, which must be very fresh, should neither be soaked in lukewarm water and salt nor parboiled before cooking as some authorities recommend, but should merely be wiped with a damp cloth. Simplicity in preparation is generally desirable, the less the liver being cooked the better ; for this reason grilled liver and raw liver sandwiches are recommended, and in the worst stages of the disease raw liver juice is prescribed. Recipes for serving the food in all these different ways and for preparing liver tea are given in the booklet. Soups may be made in a variety of ways, the variation being obtained chiefly by changing the vegetables and ingredients with which the liver is cooked. Some rather more elaborate dishes have been included among the recipes for the sake of variety, the section devoted to casserole cookery containing some of the most palatable. This method of cooking liver should prove useful as none of the " goodness " is lost, and the patient should consume all the sauce and gravy in this and other preparations as they contain much of the liver juice. The following are two of the recipes given in the booklet, the first for raw liver sandwiches, the second for curried liver :—

1. *Ingredients.*—Brown bread and butter ; lettuce, or tomato, or mustard and cress ; mustard, pepper, salt ; 6 oz. liver purée (½ lb. liver). *Method.*—Pass the liver twice through the mincer and rub through a wire sieve. Weigh after sieving. Season it lightly with made mustard, pepper, and salt. Cut some thin brown bread and butter, spread it thickly with the liver, sprinkle some tomato, lettuce, or cress with a drop or two of vinegar, cover the liver with this, and place a piece of bread and butter on top to form the sandwich. Press, and cut neatly. Serve as directed by the doctor. *Note.*—The bread may first be spread with anchovy paste or " gentleman's relish."

2. *Ingredients.*—8 oz. liver ; 1 teaspoonful curry powder ; 1 teaspoonful flour ; 1 teaspoonful good chutney, 2 teacupsful stock ; slice of apple, or ½ stick of rhubarb ; ½ teaspoonful lemon juice ; salt. *Method.*—Start by making the sauce. No fat being allowed in this diet, the method differs somewhat from ordinary cookery books directions for curry sauce. Peel, scald, and chop the onion. Chop the apple or rhubarb. Blend the flour and curry powder in a little of the stock. Put the rest of the stock on to boil, add the onion, apple, rhubarb, and chutney, and cook till the onion is tender. Stir the flour, &c., and simmer 2 minutes longer. Meanwhile cut the liver in small pieces as for any other curry. Add to the curry sauce, and simmer for 15 minutes or till the liver is tender. Add the lemon juice and serve with a little plain boiled rice.

The booklet also contains a copy of Minot's diet for Addisonian anæmia, instructions for taking dilute hydrochloric acid (A. F. Hurst), and other information which many practitioners will find useful.

EARLY MEDICINE IN MARYLAND.

WE have received from the President of the Medical and Chirurgical Faculty of Maryland an address delivered by Dr. Thomas S. Cullen at the Faculty Buildings in Baltimore. It is an interesting record of the development of medical science from the time when a charter for the Province was granted in 1632 to Cæcilius Calvert, second Lord Baltimore by Charles the First. Dr. Cullen quotes largely from the Medical Annals of Baltimore, written by Dr. John R. Quinan and dealing with the medical history of the State from 1608 to 1880, the earlier date being that when a certain John Smith set out from Jamestown in an open barge of 3 tons burden, manned by a crew of 13, hoping to find a westward passage into the Pacific Ocean. This work was brought up to date some 25 years ago by Dr. Eugene Cordell, who took note of the medical happenings in Maryland up to 1899, and Dr. Cullen points out that the time has now arrived for adding a further supplement to the volume. To this end he appeals for an organised effort to gather material, and urges members of the Faculty of Maryland to file away everything of special interest, especially obituary notices and pictures, which they may come across, and to send such records to the library of the Faculty as they accumulate. It would be of great historic interest if similar measures were taken in other of the older American States. There are many records of the earlier times, but apparently no steady effort is made to bring them up to date.

BIRTH CONTROL CLINICS.

REFERRING to the annotation on birth control centres in THE LANCET of Dec. 31st, 1927 (p. 1400), Dr. Norman Haire calls our attention to the Cromer Welfare and Sunlight Centre which has recently been established at 59, Cromer-street, Gray's Inn-road, London, W.C. This is a voluntary welfare centre, with departments for antenatal and postnatal advice, and in addition there is a sunlight department in which expectant and nursing mothers and their children are treated with artificial sunlight. At this Centre any women whose health renders it desirable that they should temporarily or permanently avoid pregnancy are given birth control advice by one of the medical officers. Since extreme poverty may lead to, or aggravate, ill-health, unfavourable economic circumstances are sometimes regarded as sufficient grounds for giving the advice, but it is not a policy of this Centre to advise women not to have children except where there is some definite indication that abstention from parenthood is, at any rate for a time, advisable.

The Centre has not applied for, and does not receive, financial help from public authorities, and is at present supported by a philanthropic gentleman ; all the medical officers give their services without payment. The Centre is only intended for poor people, and will not receive as patients those who can afford to pay a private practitioner. Visits from medical practitioners who are interested are welcomed. The telephone number of the secretary is Museum 7889.

" PRESCRIPTION PAD."

IN response to a letter from Dr. E. L. Hopewell-Ash, which appeared in our columns on Dec. 10th last, Messrs. Schering, Ltd., of 3, Lloyd's-avenue, London, have sent us a specimen of a prescription pad for employment with their Medinal cachets, which are made up to contain either grs. 5 or 10 of the drug. The cachets are contained in small boxes on which the strength is marked outside, the forms of which the prescription pad are composed suggest the larger or smaller dose according to the practitioner's discretion. It is indicated on the form that 12 cachets only have been ordered and that the prescription is *not to be repeated.* The general action of barbitone derivatives is well known, and the object of the proprietors of Medinal is to preclude the possibility of a patient being able to obtain the medicament in any other way than through the medical practitioner.

THE SICK RABBIT AND THE HUNTER.

THE Treasury Department of the United States has issued a timely warning [1] against too close contact with the sick rabbit in the parts of the United States where tularæmia is prevalent. The great reservoir of this tiresome and extremely infectious disease is the wild rabbit, whether of the jack, cotton-tail, or snowshoe variety, and the infection is generally conveyed to man in the spring time indirectly through the tick and in the summer time through the fly. Just now it is the dressing of the dead wild rabbit from which infection is to be feared. Rabbit meat, thoroughly cooked, is harmless for food, and if rubber gloves are worn by those who dress wild rabbits, the personal risk is much diminished, although the employment of immune persons as rabbit dressers is advised where possible, for even the scrupulous technique of trained bacteriologists can hardly prevent dissemination and the Lister Institute some time ago gave up the attempt to maintain the *Bacterium tularense* in the collection of type cultures. Finally, says the U.S. Treasury Department, beware of the wild rabbit which the dog or cat has caught or which a boy has killed with a club, for it is probably a sick rabbit. The hunter should not shoot his rabbits at the point of his gun ; let him be a sportsman and shoot them on the run at 75 yards, when the rabbits bagged will not be sick with tularæmia. Risk, it appears, is only incurred by the type of sportsman who returned triumphant from the desert with the carcass of an old lion which he had found strolling wearily about with a green shade over its eyes.

[1] Public Health Reports, Dec. 2nd, 1927.

A YEAR'S WORK AT LIVINGSTONE COLLEGE.

Livingstone College, Leyton, incorporated in 1900, was founded to teach would-be foreign missionaries how to care for their own health and the health of their colleagues, and how to deal with the everyday diseases of the people of the country in which they are to work, when living far removed from qualified medical aid. The College admits men and women of all nationalities and religious denominations, both missionaries going out for the first time and those on furlough. The full course of training covers one academic year and the College now numbers on its roll of past students nearly 1000 missionaries working in all parts of the world. The past year has seen the largest entry since the College was started. During the year 100 students from seven countries, and representing 28 missionary societies, have received practical and theoretical training on the care of health and in the treatment of tropical diseases, which an intelligent trained layman can be expected to carry out. The annual report for 1926–27 shows a record of good work, and emphasises the fact that a little knowledge is by no means necessarily a dangerous thing; if rightly used "a little knowledge grows by using it."

THE WICKER BUGTRAP.

SOME interesting remarks in THE LANCET of July 16th last year on the prevalence of bed bugs in this country a hundred years ago suggest how much we owe to sanitary legislation and the inculcation of cleanliness. Reference was made in the note to the "Bug Catcher to his Majesty," who before 1837 held a Royal Warrant for this purpose, and *Cimex lectularius* held sway at any rate as late as 50 years ago, at which date there existed a well-known hotel in London which by commercial travellers, who used it, was generally referred to as "buggy." So prevalent were these parasites, at any rate in the earlier years of the nineteenth century, that basket traps were made to catch them, advantage being taken of their habit of retiring for rest and digestion after their bloodthirsty debauch. These baskets were made of wicker and placed behind the bolster across the bed, as we are reminded in a note in the current issue of *Man* which is published under the direction of the Royal Anthropological Institute of Great Britain and Ireland. Illustrations are here given of a bug trap, similar to those used in the early 'sixties as part of the domestic furniture of middle-class households, which has been placed among the archæological exhibits in the museum at Cambridge. Although superior households tried to protect themselves against the pests, whom a judge has classified as "dangerous insects capable of causing assessable injury," among the common people they were regarded biologically as related to symbiosis rather than to parasitism—they argued the existence of a beneficent Creator who for poor folk provided a substitute for the periodical bleeding deemed necessary to health by their richer neighbours.

INFECTIOUS DISEASES AND ASEPTIC NURSING TECHNIQUE.

OUR knowledge of the means by which infectious diseases are spread is still indefinite, yet, by keeping within certain limits and observing certain rules, their incidence can be reduced. If this object is to be attained the primary need is that the physician in charge of the infectious case must know all the possible leakages of infection and how to stop them. But he only sees his patient for a few minutes each day, whereas the nurse is never absent and is, moreover, in contact with the other inmates of the hospital or private house. In all small matters she is responsible for the technique which prevents transmission to others, and although she receives her instructions from the doctor, she cannot do her part well unless she herself thoroughly understands the principles on which she is relying. Dr. Richardson, in the preface of his recent book, "Infectious Diseases and Aseptic Nursing Technique,"[1] points out that the ordinary text-book written for the physician is too elaborate for nurses, and he has tried to write a simpler book. In the first part, after a brief discussion of the principles of infection and immunity, he describes all the diseases which are infectious. The particular signs, symptoms, complications, and treatment of each are given and the means by which they are transmitted. This is followed by a very useful chapter on the nursing of infectious diseases at home, in which isolation, the treatment of contaminated dishes and clothing, the disposal of excreta and refuse, and discharge from isolation are discussed. The second part of the book deals with technique in hospital.

Dr. Richardson explains that here it is specially difficult to prevent the spread of infection, because the causative organisms are most virulent while secretions and excretions are in a fresh state. Organisms usually enter the body through the mouth or nose, the infection being most often conveyed by contaminated hands or by direct contact. A hospital may be usefully divided into "units." A "unit" is an infected area which includes the patients in any room or ward who have the same disease. It includes the furniture in the room, clothes, and all instruments and applications used by patients in the unit. Indirect contact between units is prevented by employing a technique similar to that used by surgeons when operating. This Dr. Richardson describes as medical asepsis. He then explains how this may be attained in a hospital and the application of its principles in hospital administration. Finally he describes the best methods of disinfection. The book is simply and clearly written and will be appreciated not only by nurses, but by students doing "fevers" and by practitioners.

[1] By D. L. Richardson, M.D., Superintendent of Providence City Hospital, Providence, R.I. London: W. B. Saunders Company. Pp. 182. 7s. 6d.

POISONING BY TETRACHLORETHANE.

TETRACHLORETHANE is known to be a powerful narcotic acting on the central nervous system and its inhalation in the form of aeroplane dope gave rise to some of the cases of toxic jaundice among munition workers during the war; but instances of direct poisoning are rare, and interest attaches to a case reported by Major R. A. Hepple, R.A.M.C., in the *Journal* of the Corps for December, 1927. The patient, aged 21, was unconscious all the 20 hours he survived; coma was almost the only symptom. His stomach was washed out, but the heavy tetrachlorethane was not all evacuated. Respiration gradually failed, and the temperature, which at first measured 96·2° F., became 104·2° F. just before death. At the post-mortem examination small erosions were seen in the œsophagus, stomach, and small intestines; cloudy swelling and congestion of the liver and kidneys, congestion of both pulmonary bases. The thymus weighed ½ oz. The stomach contained about 6 oz. of fluid, from which 12 c.cm. of tetrachlorethane was recovered by distillation. A single cubic centimetre given to a healthy rabbit rendered it comatose in ten minutes.

NEW PREPARATIONS.

FROM the Clayton Aniline Company, 40, Southwark-street, London, S.E., we have received a specimen of *Prokliman*, manufactured by the Society of Chemical Industry in Basle. It is an ovarian hormone compound designed to combat climacteric manifestations. It has received high praise in well-known German general and special medical journals, and Dr. Walter Braun, among others, writing in the *Zentralblatt für Gynakologie*, details the good results obtained by treating both women whose ovaries had been removed before the menopause and women whose climacteric had occurred in the usual way. The preparation has been added to the list of "Ciba" brand pharmaceutical specialities.

Concentrated Fluid Extract of Liver. For this preparation, which emanates from the Armour Laboratories in Chicago, and is distributed from Queen's House, Kingsway, W.C., it is stated that in each ounce of the extract 8 ounces of fresh and specially selected material is represented. The product is prepared from fresh calf liver, the manufacture of the alcoholic extract taking place whilst the liver still retains natural heat. Recent research has shown the value of liver preparations in certain deficiency disorders, and we may refer here to the paper which appeared in our columns[1] last November by Dr. John Anderson and Dr. E. I. Spriggs on the Minot-Murphy liver diet in Addisonian anæmia. The value of liver diet in sprue is illustrated in the same issue by Dr. Carmichael Low and Mr. W. E. Cooke.

We have received from Messrs. Coates and Cooper, 41, Great Tower-street, London, E.C., two preparations from the laboratory of Messrs. Reed and Carnrick, of Jersey City, N.J., for whom they act as distributing agents: (1) *Protonuclein*, (2) *Pancrobilin Pills*. The preparations are designed to meet glandular insufficiency as revealed by recent work on the inter-relations of the natural secretions. The claims by the manufacturers, which accompany the samples, are very large and obviously require endorsement from the records and notebooks of practitioners whose verdicts result from actual experience in practice.

Messrs. Roberts and Co., of 76, New Bond-street, London, W., have sent us *Elixir Sedoval* which is a bromide salt of strontium combined with an extract of valerian; the objectionable odour of the latter has been eliminated so that the association of the two products is free from disagreeable odour or taste. A tablespoonful of Sedoval contains grs. 6 of strontium bromide and 12 minims of extract of valerian. The sedative action represented by its make-up is obtained in nervous manifestations, in various forms of hysteria and in insomnia, if such a dose be taken two or three times a day, varied in accordance with the directions of the physician.

[1] THE LANCET, 1927, ii., 958.

Clinical Address
ON
PERNICIOUS ANÆMIA.*

By LORD DAWSON OF PENN.

THE conception of pernicious anæmia is interesting from the way it has grown and from the problems it provokes. Interest consists in not only having a past but a future.

Let me recall the landmarks in our knowledge.

Although the first case was reported by Combe,[1] of Edinburgh, in 1822 and in 1851 Barclay [2] noted the glossitis which is an occasional feature, it was Addison [3] in 1855 who gave us the first conception of this disease; and it is worth recording that during its study he "stumbled upon the curious facts" (to use his own words) which led to his discovery of Morbus Addisonii. He described the clinical picture; the insidious onset; the occurrence in both sexes beyond middle life, the body as "blanched, smooth and waxy" and "flabby rather than wasted"; the breathlessness and palpitations; the progressive langour and prostration, and the continuance, in spite of all remedial efforts, to a fatal termination. He recognised the disease as something apart and without discoverable cause, and termed it "idiopathic" to make a distinction from cases presenting "the usual causes and concomitants of the anæmic state." The remarkable remissions seem to have passed unnoticed, but when one reflects how far off are those days and how primitive were the then methods of blood examination, one thinks with admiration of the clinical acumen which Addison's description discloses. And when it is further recalled that 17 years later Biermer [4] described the disease yet failed to distinguish it from certain other grave anæmias, it seems only just that one of its titles should be "Addison's anæmia."

OBSERVATIONS AND THEORIES.

The next link was forged in 1876 by Cohnheim,[5] who described megaloblastic degeneration of the bone-marrow as the cause of the disease; that is, he held that the bone-marrow failed in its function of the production of blood—hence the anæmia.

Of the associated conditions atrophy of the gastric mucous membrane was noted by Fenwick [6] in 1877, degeneration of the posterior columns by Leichtenstern [7] in 1884, and achlorhydria by von Noorden [8] in 1891. Next came Ehrlich,[9] who held that the megaloblastic changes in the marrow were regenerative and compensatory to blood destruction, thus raising with Cohnheim the issue, which yet remains unsettled, whether the changes in the marrow are degenerative or regenerative—under-production or compensatory over-production.

In 1900 the work of Hunter [10] brought out the important part played by septic teeth. Secondly, he made gravimetric estimations of the hæmosiderin in the liver, showing that in amount it far exceeded that found in any secondary anæmia, and postulated hæmolysis in the portal veins. Further, he emphasised that the disease is not merely an affection of the blood, but is characterised by features such as glossitis, achlorhydria, diarrhœa, and degeneration of the spinal cord, some of which may precede the anæmia.

Hunter espoused the view of Ehrlich as opposed to that of Cohnheim—namely, that the changes observed in the marrow are regenerative and intended to compensate for hæmolysis produced by bacterial toxins. That hæmolysis on a considerable scale does take place in pernicious anæmia is suggested by the intense prussian-blue reactions in spleen, liver, kidneys, lymphatic glands, and synovial membranes. Further support for this view is found in the excess of bilirubin in the plasma, and of urobilin in the urine and fæces. I stress this evidence because recent original work (Zadek,[11] Peabody [12]) has led its authors towards the conclusion that the anæmia owes its existence to defective blood-formation in the marrow, thus reverting to the view that Cohnheim put forward in 1876. The two opinions might be reconciled—and they are both based on careful observations—by assuming that the blood turned out by the marrow is so abnormal as to be an easy prey to destruction.

After Hunter's work in 1900 we come to the demonstration of reticulocytes, by Cesaris-Demel [13] and Chauffard [14] in 1907, by vital staining. If a blood film is treated with brilliant cresyl blue before the use of a fixative a network can be shown in the cytoplasm of the red cells. This network has been demonstrated by Sabin [15] in the earliest red cells of the chick embryo at a time when they are still nucleated and is to be considered a cytoplasmic substance. It disintegrates and disappears as the cell becomes mature. The reticulocytes, therefore, afford a criterion of youth, and their number in a blood preparation is an index of the activity of normal blood regeneration. Thus whereas, in films of normal blood, reticulocytes may be present to the extent of, say, 1·5 per cent., in active blood formation they may reach 15 to 30 per cent.

ORIGIN AND ABNORMALITIES OF RED CORPUSCLES.

Here I must step aside for the purpose of clarity and consider certain happenings in the rise and fall of the red blood cell. My digression must be brief and controlled or we shall become submerged in the morass of the higher hæmatology.

In the embryo there appear blood islets, some in the yolk-sac and others in the primitive liver. These are aggregations of cells of which those that are centrally placed become primary blood cells (hæmocytoblasts) and those that are peripherally placed become an endothelial envelope which is the first manifestation of the reticulo-endothelial system. These primitive blood cells take on the function of carrying hæmoglobin and become primitive erythroblasts. The latter in turn become large cells, some of which remain nucleated and are called megaloblasts, whilst others lose their nuclei and become megalocytes. These forms belong only to the blood of the fœtus and are not found in post-natal life either in blood or marrow, except in pathological states like that of pernicious anæmia. In postnatal life the primitive erythroblasts are derived from the reticulo-endothelium, proliferating from the endothelial cells of the capillaries of the marrow. From these arise the normoblasts which lose their nuclei and ultimately become the normal red cell.

Punctate basophilia is an abnormal change in a young red cell and therefore does not appear in the normal development of blood (Ferrata [16]). Polychromatophilia is likewise evidence of immaturity of the red cell and is a normal stage in the regeneration of blood. Anisocytosis is to be regarded as evidence of hurried regeneration, and is not a strictly normal phenomenon. Poikilocytosis is never seen in health and should be looked on as a more definitely abnormal mode of regeneration than is anisocytosis. Lastly we come to megalocytosis, which is an important characteristic of pernicious anæmia and may be regarded as *the* most important diagnostic feature in the blood picture. It can be demonstrated by two methods, the first being the extreme variation from normal as shown by Price Jones [17] in his skilled and laborious technique for measuring the diameter of the red cells, and the second being the increased average volume of the red blood cell as Alder [18] showed by a viscosimetric method. Megalocytosis accounts for a colour-index above unity, for since the normal red cell is already saturated with hæmoglobin, only a larger cell can contain more. The exact mode of production of the megalocyte is disputed; it is most probably a direct derivative of the megaloblast.

The megaloblast, though found widely distributed throughout the hæmatopoietic tissues of the fœtus, is

* Based on communications made to the Brighton and Sussex Medico-Chirurgical Society and the Windsor and District Medical Society.

absent in those of the normal adult. However, in certain severe anæmias a reversion to this fœtal type occurs, and one of the most characteristic findings in pernicious anæmia is a megaloblastic activity of bone-marrow, spleen, and liver, with the occasional escape of megaloblasts into the blood. The bone-marrow in pernicious anæmia has been studied in life by trephining the tibia, and Zadek and Peabody have shown that during relapses there is an active proliferation of megaloblasts, which so increase and multiply as to occupy much of the available bone space, the fat cells collapsing and their contained fat disappearing. At the same time a few normoblasts and red cells are found, from which we may infer that the megaloblastic proliferation seems to serve an unknown and feeble physiological purpose; perhaps an abnormal need calls forth an abnormal effort. On the other hand, with a remission the megaloblasts in the marrow more or less disappear and a preparation shows normoblasts and mature red cells less closely packed and with marrow fat easily discernible. With this change in the marrow picture, and as a sequel to it, the red blood count correspondingly improves.

Taking advantage of the fact that the proportion of reticulocytes is the best criterion of active blood formation, Peabody searched for these immature forms in the blood of pernicious anæmia during a relapse and found that their percentage was not higher than that found in normal blood, which accords with the view that the relapse is the result of diminished blood formation. On the other hand, in anæmias which are admittedly hæmolytic, like that of acholuric jaundice, the reticulocytes reach 20 to 25 per cent., showing that a compensatory blood formation is in active process. These considerations have led our Swiss and American colleagues to conclude that the immediate cause of pernicious anæmia is a defective formation of blood in the marrow, due to the reversion of the cellular content of the marrow to the fœtal megaloblastic type.

Possible Bacterial Cause of Hæmolysis.

Diminished blood formation, however, cannot be the whole story. That there is definite hæmolysis in pernicious anæmia cannot be doubted when one recalls the excess of free iron demonstrable in the liver, spleen, kidney, and even synovial membranes, or the excess of plasma-bilirubin, as demonstrated by the van den Bergh [19] test, and the excess of urobilin in the urine and fæces.

There are grounds for associating bacterial toxins with the cause of this hæmolysis. From time to time a case occurs in which a close connexion with a septic focus can be established; septic teeth can be quoted as an example. The following case suggests the operation of a toxin producing Addison's anæmia.

Some years after an uneventful appendicectomy a young woman had acute intestinal obstruction. At the operation inches of gangrenous ileum were removed. Within two days symptoms of obstruction recurred, and a second operation was performed, involving a second anastomosis. Life was preserved, but ever afterwards intestinal function was impaired; there was distension and liability to constipation and diarrhœa, but she lived her life, though with limitations, and even married. Later she developed signs and symptoms resembling those of pernicious anæmia, and these persisted with remissions to her death. *B. welchii* was recovered in predominance more than once from the intestinal content.

Moench, Kahn, and Torrey [20] in an examination of the stools in 35 cases of pernicious anæmia showed that *Bacillus welchii* gives uniformly higher counts than normal. However, none of the strains they isolated could be shown to be more hæmolytic or pathogenic than *B. welchii* from the stools of normal persons. They consider that this organism comes into play because of its increased numbers and activity at an abnormally high level in the alimentary tract, where absorption is more active. That the cause of the upward spread of colonic organisms is achlorhydria is a view now widely held. Cornell [21] showed that *B. welchii* injected subcutaneously into rabbits caused an anæmia with constant anisocytosis. Kahn and Torrey,[22] working at the same time on the effect of intravenous injection of the toxin in monkeys, obtained very similar blood pictures with high colour indices and leucopenia. According to Gulland [23] these workers have since gone further. Having damaged the gastric mucosa of monkeys and fed them with cultures of *B. welchii* they have produced in the blood and tissues changes identical with those found in pernicious anæmia in the human being.

Constitutional Factors.

There is evidence of other factors at work, especially constitutional factors. Thus achlorhydria, so constant and so often for years a precursor of the disease, has been shown by Hurst [24] to exist in the blood relatives of patients with pernicious anæmia.

In this disease much depends on a patient's reaction. That is why it occurs in some with so little apparent provocation and in others it keeps away in spite of every provocation. The make-up of the individual is important and is illustrated by the proneness of pernicious anæmia to occur in certain families—a proneness which finds an interesting analogy in the incidence of the form of anæmia due to *Dibothriocephalus latus*. In certain regions of Finland, although this tapeworm is common in the human intestine, the anæmia is nevertheless rare. Thus in only a small percentage of the infected did Schauman [25] find the anæmia and amongst these the incidence was largely familial. Further, it is now known that this susceptibility is also racial, for in areas where Finns have brought the parasite to North America, though Americans and Finns alike become infected only Finns (and then only certain families) develop the anæmia, whereas the Americans escape. This bears directly on our conception of the ætiology of pernicious anæmia, for dibothriocephalus anæmia shows a blood picture identical with that of idiopathic pernicious anæmia and is caused by a hæmolytic toxin which can be isolated from the segments of the parasite.

Liver Treatment.

Let us now pass to the treatment of pernicious anæmia by feeding with liver and liver extract. This is based on the results of experiments on dogs by Whipple and Robscheit-Robbins.[26] These demonstrate that fresh liver contains some principle which promotes blood regeneration. It was first applied to cases of pernicious anæmia by Minot, Murphy, and Cohn,[27 28 29] who found that on a diet rich in mammalian liver (about 200 g. cooked weight daily) there was rapid and striking improvement, with prompt increase of the red blood corpuscles in almost every case. About the fifth day the reticulocyte count rose often to 14 per cent., the rise corresponding to a fall in the plasma bilirubin as the result of diminished blood destruction. This was followed by a prompt and steady increase of the red cell count. Thus in 90 cases the average numbers of red cells rose from 1½ to nearly 4½ millions in two months. Other forms of anæmia show striking benefit under the same treatment.

Active extracts of liver are now being used with success. Thus Spence [30] employed a liver extract made by the method of Cohn. He used 20 to 25 g. a day and his cases showed definite improvement after seven days. Another method which avoids the use of raw or cooked liver consists in drying liver in vacuo and powdering it at a low temperature. This powder is easy to take, and two ounces of it correspond to eight ounces of fresh liver substance. We may hope that in the near future the composition of the extract may be determined so that it can be synthetically prepared.

In conclusion, three possible links can be traced in the chain of ætiology: achlorhydria, abnormal flora in the upper half of the alimentary tract, and the absence or insufficiency of a specific function of the liver. What is the interrelation of these factors and the rôle played by each in the causation of the disease remain a matter for the future to decide.

(*References at foot of next page.*)

An Address
ON THE
EDUCATION OF MEDICAL OFFICERS FOR SERVICE IN THE TROPICS.

Delivered at the International Continuation Course of the League of Nations, Nov. 24th, 1927,

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Part II.*—TROPICAL HYGIENE.

A story is told of a distinguished sanitarian in the Indian Medical Service. He was given a dinner on the occasion of his retirement, and heartily congratulated on the result of his labours in the cause of tropical hygiene. Replying to the toast of his health, he said that he attributed whatever success had attended his efforts to two factors: first, that he possessed an acute sense of humour; and, second, that he possessed no sense of smell!

If these were indeed requisites for the success of a tropical sanitarian the outlook would, I fear, be gloomy for teachers of tropical hygiene, as one cannot instil a sense of humour where it is lacking, and the production of anosmia would entail rather a serious operation. The colonel was joking, and yet there is no doubt that unless a tropical hygienist has a sense of humour he is likely before very long to become a corpse or a neurasthenic, while it is equally true that at times he wishes his olfactory sense was absent or blunted, though, with all due deference to the jovial colonel, the possession of a good "sanitary nose" is a great asset in public health work. I know of at least one unfortunate who perished from food poisoning owing to the fact that he had lost all sense of smell. However humorous or the reverse the student may be, whatever his powers of smell, one thing is certain, he must have been well grounded in those principles of tropical medicine we have already discussed before he undertakes the study of tropical hygiene. Some people will tell you there is no such thing as tropical hygiene. In one sense this is true enough. The principles governing hygiene in the tropics are those which apply to the hygiene of countries with temperate climates. On the other hand, the application of these principles is often very different in the tropics from their application, say, in Europe. It is in practice, not in principle, that the hygiene of countries in the torrid zone differs from that of those which are termed Occidental.

The practice differs for various reasons. In many cases the conditions are primitive and must be met by what is called field hygiene, partly on account of the environment, partly because there is a paucity of funds. Too often bricks have to be made without straw, and the man blessed with ingenuity finds every scope for it. Again, the populations which have to be served and handled, even if not primitive, are usually devoid both of a sanitary sense and a sanitary conscience, and measures tried and proved amongst educated communities fail lamentably when introduced amongst races which are backward from the hygienic standpoint. Yet, again, there are customs and prejudices, religious and otherwise, which have to be overcome and which may prove insuperable barriers.

Equally important is the fact that the ætiology of the communicable diseases encountered differs in many instances from that of the maladies met with in non-tropical lands, that the rôle of the arthropod is, if not paramount, at least greatly in evidence, and that the climatic conditions usually tend to aggravate all forms of nuisance and of danger to health. These are commonplaces, but they are worth bearing in mind, for any training in tropical hygiene must take cognisance of them, and though, as ever, experience is the best teacher, yet the student can be given some idea of what he has to face and how best he should face it.

Subjects the Student should Study.

In the first place, he must be taught how to look after himself in the tropics, for a blind leader of the blind will not only forfeit respect, but may lead some of his flock astray, and perhaps bring his own career to a sudden and disastrous termination.

Climatology and Acclimatisation.

A course in tropical hygiene should, then, commence with a discourse on climatology, and should briefly and succinctly indicate the physiological and pathological effects of tropical conditions on the life and health both of the indigenous native population and of the white sojourners and settlers. Here, as elsewhere throughout the course, if there be time, it is well to direct attention to what was known on this subject in the olden days when there was no bacteriology or protozoology, and no real medical entomology. A few quotations from a book like Johnson's "Influence of Tropical Climates on European Constitutions" are likely to interest the student and impress upon him the fact that, despite all our new knowledge, the climate of the tropics still remains, as of yore, a menace in the background and cannot be lightly discarded. It is, I think, better to employ the historical perspective in this way throughout, giving point to the subject under discussion, rather than to embark on a disquisition upon the history of tropical hygiene which would take up far too much time, probably weary the majority of the audience, and irritate those of them with severely practical minds who want to get down to what in vulgar English is called "brass tacks," that is to say essentials, essentials both for examination purposes and for their work abroad. In advancing a plea for the intro-

* Part I., Tropical Medicine, appeared in THE LANCET of Jan. 14th, p. 63.

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(*Continued from previous page.*)

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duction of occasional historical references I realise I am advocating rather an ideal type of course for the necessity of imparting a vast deal of important information within a very limited period (a point to which further attention will be paid) may well exclude any such excursions. Yet in the study of hygiene, more perhaps than in the case of any other subject, it is advantageous to let the lessons of history speak for themselves. They are impressive and should engender both faith and hope, showing the student that, even if some of the details he has to master are dry, the collective effects of the knowledge gained and applied by his predecessors has been remarkable and stimulating him to fresh efforts in a good and promising cause.

Not only must the effect of climate on native races be considered but, as must be evident from what has already been said, some attention must be directed to the native races themselves, to their habits, customs, religious prejudices, superstitions, and so forth. It is, of course, impossible to go minutely into such matters. A few striking illustrations should be selected, one, let us say, from pagan negroes, another from Mohammedan Arabs, a third from Hindus and Hinduism, a fourth from the "heathen Chinee." This will suffice for lecture purposes, and the student can supplement what is told him from the literature, as, for example, from "Mother India," that astonishing but well documented record from an American source, or, in due course, from personal experience amongst the people with whom he is brought into contact. Some men can, of course, envisage their future surroundings and possess imagination which helps them to foresee and to cope with difficulties, but others never seem to realise what the future has in store for them, and without some guidance will, on reaching the tropics, feel like fish out of water for quite a lengthy time, during which they may either do very little good or a great deal of harm.

Something, I think, should also be said about handling native races. It is, of course, not easy to formulate a set of rules generally applicable, but there are certain cardinal principles which can and should be enunciated, and will be found of value to the tyro.

The subject of the white man in the tropics is an easier one, though it is a difficult task to deal adequately and to advantage with the vexed question of racial acclimatisation. It must, however, be attempted and a synopsis given of the various views at present held, stress, of course, being laid on those findings which admit of no dubiety. Here some reference must be made to sexual hygiene, for it plays an important part in this acclimatisation question, more especially in connexion with the onset of neurasthenia. Health officers should be alive to this aspect of the problem. A clear differentiation should be drawn between the effect of the dry and of the moist tropics on the comfort and health of the white resident, and attention should be directed to the modifying influence of altitude.

Personal Hygiene.

The subject of personal hygiene may next claim attention, and, while much that is said will apply to the students themselves, the discourse must not be limited to the prophylactic measures they should adopt against climatic effects and the usual trials and dangers which beset white men in the tropics, but must include the care and attention which have to be exercised by non-medical women, and in the case of infants and young children. Here let me say that a very safe guide is the interesting and useful little book compiled by Dr. Balfour Kirk and entitled "Hints on Equipment and Health for Intending Residents in the Tropics." The subjects to be considered under this heading are numerous and varied. The necessity for inoculation against diseases of the so-called enteric group must be emphasised and a definite statement made on the policy of not inoculating infants and young children, the reasons for such exclusion being given. There should be some reference to the advisability or otherwise of submitting to inoculation against plague and cholera. The value of vaccination against small-pox must be affirmed with no uncertain voice, for in the tropics variola is a disease with which one cannot afford to trifle. It must not become the sport of politicians, the plaything of cranks, the theme of the ignorant, even the well-meaning ignorant. Clothing, equipment, both medical and sanitary, the regulation of life and habits in a hot country for all ages and both sexes, must be discussed and special stress should be laid on the value of rest. Not only the care of the body, but the care of the living quarters, including methods for mitigating heat and glare, should be dealt with, from the humble hut to the storied house, and on no account must the lecturer omit the important question of native servants. A little knowledge may be a dangerous thing, and while it may be admitted that to know the curious, often disgusting, and not infrequently dangerous habits of the native servant thoroughly would necessitate donning his pigmented skin and viewing the world through his eyes, "forewarned is forearmed," and the potential risks which the native servant represents should be impressed upon the class in a general way, and illustrated by a few striking examples such as the cholera carrier, the ejector of saliva upon laundry material, the user of the filthy kitchen cloth.

Of equal importance is the matter of the housing of native servants and the need of frequent inspection of their quarters, as well as of the kitchen where the cook and his myrmidons, often masters of their trade, may inadvertently add death to the pot.

Maternity and child welfare is a big subject, but it cannot be omitted, even though only a few of the special difficulties imposed by the tropics can be touched upon and reference made to the placental transmission of such maladies as malaria and ankylostomiasis. Its bearings, both on the white and the indigenous race, must be considered, and, so far as maternity in native races is concerned, this part of the course will link up with the first lecture, for native habits and customs very often play a paramount part in the hygiene of pregnancy, childbirth, and the puerperium. Similarly the question of child welfare, both amongst the white and coloured sections of a tropical population, is intimately associated with that of food and dietetics which we are fast approaching.

Housing.

Housing in the tropics may, however, with advantage be first considered if only because it will embrace markets where food is housed or stored. There can be no doubt that housing is one of the most important topics in our ideal course. Anyone who has, as I have, seen a tropical country redeemed from barbarism and the early efforts of a white race to obtain a footing in it, will admit that hygienic measures are comparatively futile until decent houses are provided. For example, the morbidity and mortality amongst British officers in the Bahr-el-Ghazal Province of the Anglo-Egyptian Sudan were lamentably high until more or less settled conditions were forthcoming and they were able to occupy houses giving a measurable degree of comfort and protection.

In the case of native races also housing plays a prominent part. This has been specially recognised in Kenya Colony where, again and again, the director of the medical department and the chief sanitation officer have emphasised the need of revolutionising native housing if disease generally, and notably plague, is to be mastered. The Dutch in the East Indies have not only recognised this need but have gone a long way to meet it. The whole subject can be made very interesting, as well as instructive, if properly handled, and the lecturer should indicate the good points in native housing methods where these exist, as they do exist, and caution would-be reformers against misdirected zeal. In the case of European houses the question of screening against flies and mosquitoes will come up for consideration, and, in my opinion at least, the students should be

warned to discount the statements of old stagers in certain tropical countries to the effect that white men and women cannot live in screened houses owing to their stuffiness and the feeling they engender of being "cribbed, cabined, and confined." It is not a question of stuffiness but of stuff and nonsense in many instances and, even where, in sheltered areas, screening may make a house somewhat close, the advantages far outweigh the disadvantages. Partial screening versus total screening demands consideration, and here not only the screened verandah but the verandah as a verandah may suitably form the subject of discourse. In other words, should tropical houses be furnished with verandahs? One can understand the director of a public works department jibbing at expense and becoming an opponent of verandahs, but it is strange to find medical officers decrying their need and value. Possibly some of the opposition is due to the fact that so many verandahs are wrongly constructed. How rarely are they properly ventilated! An unventilated verandah often permits of a cushion of hot air lying up against the protected side of the house and so in part defeats its own ends. Given adequate ventilation, a verandah is an essential part of a tropical residence, and the prospective health officer should be duly apprised of that fact.

Year by year hygiene in the tropics approximates more closely to that of temperate climates. In fact, in large tropical cities many aspects of public health, especially those related to sanitary engineering, do not greatly differ from those which present themselves in urban areas in Europe and the United States. Hence, when teaching tropical hygiene here, it is of great importance to give students every opportunity of visiting works and plants concerned with the public health from which useful and practical lessons can be drawn.

So far as housing is concerned, should anything be done in this direction? I think not. True, if there were ample time it might be advantageous to have a look at bungalow construction and to familiarise the student with certain aspects of house construction, but these are matters affecting rather the engineer and the sanitary inspector, and, if the future health officer gets a clear grasp of the principles underlying house construction in the tropics, it should be sufficient for his purpose. His function in this connexion will be, as a rule, advisory, not executive.

Under the heading of housing, however, come such buildings as markets, slaughter-houses, hospitals, schools, prisons, and factories. If it can be arranged, visits should be paid to all or some of these, the most modern and up to date being chosen for the purpose. The most important are, I think, markets, slaughter-houses, and prisons, for the health officer in the tropics is constantly concerned with questions having a bearing on buildings constructed or to be constructed for these three purposes.

While, as a rule, markets and slaughter-houses in the tropics are, even when primitive, built on reasonable and sensible lines, this is often far from being the case with prisons. I think I have only once seen in the British tropics a prison built on lines corresponding to those followed in this country and which certainly possess some advantages from the hygienic if not from the economic standpoint.

Hospital and school construction is perhaps best studied from plans of good types already existing in the tropics, and of these there is now no scarcity, though they are not always easy to obtain. The housing of native labour is a matter requiring very careful attention, and students should be told what has been done at the mines on the Rand, in Natal, in the Panama Canal Zone, and elsewhere. A book like Pearson and Mouchet's "Hygiene of Native Compounds" is of great value and leads me to say something on the subject of camps.

Although, as indicated, the health officer destined for the tropics should be given an opportunity of becoming practically familiar with various developments in public health and sanitary engineering in a country blessed with a temperate climate and possessing the doubtful benefits of civilisation, he should at the same time gain instruction, if possible, in *field hygiene*, those comparatively rough-and-ready methods, those shifts and improvisations, as well as those special adaptations which are usually a feature of army sanitation during active service. For this purpose, here in London, we are in the habit of sending our students for a day to the Army School of Hygiene at Aldershot, where the field demonstration and museum afford excellent practical instruction in everything pertaining to camp hygiene and that of an army in the field.

I cannot leave the subject of housing without a brief reference to *town planning*. Something should be said about the latter, if only to enlist the student on the side of those who deplore the mistakes of the past, seek to guard against their repetition, and to remedy them as far as may be. The expert town-planner is a specialist, but every health officer in the tropics should be a sturdy advocate of town planning along sound lines and, in the future, more than in the past, his opinion is likely to be sought in the laying-out and reconditioning of townships.

Food and Dietetics.

Food and dietetics together form one of the most important sections of the course. Many lectures might well be devoted to it, but even a limited survey can be made informative. One has again to deal, in the main, with general principles, but it is, of course, advisable to devote special attention to food deficiency and its relation to such diseases as beri-beri, scurvy, and pellagra. Some of the commoner tropical foodstuffs, more particularly those fruits (bananas) and cereals (maize and millet) which form the staple dietary of some native races, will be considered, as will the use and abuse of condiments. Milk and its products require special attention for, complicated as the milk question is in a country like England, it is still more complicated, at least in certain directions in, let us say, India, while, in the tropics generally, the cow is not the almost universal provider of lacteal fluid that she is in this and many other lands. If, as Cicero said, we are "possessed with thoughts of the kitchen," and our students are, like Horace's youth, devoted to kitchen studies, such thoughts and studies must not be limited to what is prepared and cooked in the kitchen. Far from it, for the hygiene of food in the tropics is a matter to which special attention must be paid. Hence the lecturer must deal with the handling and inspection of food, its preparation, its storage and preservation with a dissertation on cold storage. He must refer to tinned and bottled foods, a subject which will lead him on to food poisoning and its association with kitchen hygiene and man's enemy, the fly. The hygiene of milk, of aerated waters, and of ice possesses no little importance, and students should certainly be taken to see a pasteurising plant and, if possible, should visit both a bad and a good aerated water factory. If only one of these is available I should say "go to the bad," for it will teach more and better lessons than the up-to-date place and, in any case, there are few localities in the tropics where modern and elaborate plants are or can be installed.

Water and Water-supplies.

We now come to the great subject of water and water-supplies, and this perforce must, for the most part, be handled along lines familiar in all courses on hygiene, under such headings as sources of supply, classification of waters, sources of pollution, collection, protection and storage, distribution and purification. In addition, the relative values of bacteriological and of chemical analyses must be discussed and, so far as bacteriology is concerned, the suitability or otherwise for tropical work of the methods and standards adopted for use in temperate climates requires consideration.

Stress should be laid on the special value in the tropics of a careful personal inspection of the source of supply and of its surroundings, a form of examina-

tion at least as important as any laboratory procedure, and in certain circumstances much more important. Another matter which must be impressed upon the student is the absolute necessity for making adequate provision for the removal of waste water before introducing an ample water-supply into any settlement. This possesses an unwonted significance in the tropics, as neglect to secure proper drainage is likely to be followed by retribution in the shape of mosquitoes and malaria. When the problems of purification are being expounded it should be remembered that mechanical filters and chlorination now play a great part in water hygiene in the tropics, and every effort should be made to enable the students to see for themselves rapid filtration and chlorination in actual operation. More primitive methods of purification of water, or of securing a satisfactory supply, under discouraging conditions, both on a small and a large scale, should be indicated and, naturally, wells, both shallow and deep, will claim a fair share of attention. A student who cannot explain how a shallow well can be effectually protected from pollution, and how, if polluted, its contents should be treated, is certainly not a satisfactory class product.

"Conservancy."

Under the general title "conservancy," the collection, removal, and disposal of both excreta and refuse fall to be considered, and it is often convenient to deal here also with sullage water and surface drainage. Mrs. Humphry Ward, the novelist, in the person of one of her characters, once said: "In my youth people talked about Ruskin, now they talk about drains." Drains, however, need not occupy much of the time of our lecturer on tropical hygiene, because in most parts of the tropics they do not exist. True he must say something about them, but he is much more concerned with simple sanitary appliances, and the pail unhappily bulks more largely in hot countries than the drain or sewer. I remember Dr. Cameron Blair, of Nigeria, an able and experienced health officer of the Colonial Medical Service, once saying to me that, for the prospective M.O.H. in the tropics one might do worse than recommend the study of Vivian Poore's "Essays on Rural Hygiene." Accordingly the student may be introduced to the subject in the following terms:—

"The indiscriminate scattering of human ordure on the surface soil is distinctly a more dangerous and offensive procedure in hot than in cold or temperate countries. For one thing, the deposits are much more likely to be infected, whether with the ova and larvæ of helminths, the cysts of *Entamœba histolytica*, the causative factors of diarrhœa, or the bacilli of enterica, dysentery, or cholera. For another, such virus-distributing agents as flies and dust are much more in evidence, while the habits of many native populations—for example, the way in which they go about barefoot, their methods of feeding and preparation of food, their disregard for general cleanliness—facilitate the transmission of disease. Yet again, in hot, moist climates at least, decomposition rapidly occurs, and though eventually it has the effect of rendering the excreta harmless they become at first, if in any bulk, exceedingly malodorous.

"The same is true in some respects when urine is voided in any quantity on the ground, and hence it is of the greatest importance to prevent soil pollution in the tropics." [1]

He will then be instructed as to latrines without receptacles and the ancient precepts and practice of Moses, first of known hygienists, and he will be told how methods must differ according to local conditions, for what is fit and proper in the Sudan is the very reverse in British Guiana. The danger of flies must be dinned into him, and the means of circumventing *Musca domestica* and its congeners in ways, some of which are the outcome of the Great War, fully detailed. Latrines, both private and public, with receptacles; complications introduced by the necessities of travel; native requirements, varying with creed and country; urinals of different kinds, all these somewhat unsavoury but essential matters require attention, and happy the lecturer who can impart a little chaste humour into the dry systems of conservancy. I think it must cheer and encourage a student to know that, during the war, an unlucky wight was seen with his ear close to the upper end of a funnel urinal which, in his ignorance and simplicity, he had mistaken for a listening post!

Incineration.

Methods of removal and disposal need not detain us beyond a reference to incinerators and the process of incineration. Too enthusiastic an advocacy of incineration will probably cause the lecturer to be dubbed an Ananias by one of his ex-students trying desperately to burn excreta under conditions which force him, in the words of an old but caustic dramatist,[2]

"to suffer wet damnation to run through 'em."

It is remarkable how opinions differ on the subject of the utility of incineration. Some appear to employ it successfully under all kinds of conditions, others have little use for it and magnify any nuisance which it may produce. There can be no doubt that a great deal depends on proper construction, adequate precautions, and an efficient technique. Given these desiderata, wonderfully good results may be obtained, even under trying circumstances. Like everything else in the practice of hygiene, incineration demands the exercise of common sense, attention to detail, and careful supervision.

The collection, removal, and disposal of refuse is a section which can be made far from uninteresting and can be lightened by a few historical references. Thus Zanzibar of the present can be compared with the "Stinkibar" of Livingstone's days, while the evolution of methods of disposal from the crude dump to the scientific process on which the Beccari system depends can be handled in a manner sufficiently attractive. Incineration will again come to the fore, but in some ways the incineration of refuse is a different problem to the incineration of fæces. Both may, of course, be combined, and in this connexion a few words on stoking and stokers will not be out of place.

Disposal of Waste Water.

The student should be warned that in many parts of the tropics one of the most difficult problems he will be called upon to consider, if not to solve, is the disposal of waste water. I believe that one would not be far wrong in saying that sullage has sullied not a few health records. What with difficulties due to heavy rains, to clayey soil, to soap, to offensive matters as in the case of sugar factories and slaughter-houses, to the fouling of natural watercourses, and to decomposition, the task of dealing with waste waters is often the bane of a medical officer of health in a country where there are no convenient drains and sewers to hide it from the sight and smell of the public.

Still, there are ways of getting over most of the difficulties, and amongst them the student should be taught the value of the use of lime. Disinfection and disinfestation call for careful exposition. The rôle of the tropical sun as a deodorising and disinfecting agent, its desiccating effects in desert regions, its limitations, and the known records of its action on pathogenic micro-organisms both in soil and water may precede a lecture of the more customary type introducing physical and chemical agents and their application.

Disinfestation.

If the myth of terminal disinfection has been exploded in the case of the communicable diseases of temperate climates, still more may it be relegated to obscurity in lands where intense sunlight and the sun's heat, fresh air, and the free perflation of wind are readily obtainable and where soap and water and limewash are nearly as cheap as in Europe. In the tropics disinfestation is more important than disinfection, and time may profitably be spent in a consideration of the manifold methods in use for destroying vermin, employing that term in a broad sense. Foremost amongst the vermin comes the

[1] The Practice of Medicine in the Tropics. Edited by Byam and Archibald.

[2] Cyril Tourneur.

house-fly, and this ubiquitous insect must be faithfully followed, along preventive and destructive lines, from egg to imago.

Formerly lice did not greatly concern the tropical hygienist, at least as disease vectors, except in certain parts of British India and in subtropical countries, for louse-borne typhus was rare and relapsing fever was largely confined to the regions mentioned. The recent southerly advance of louse-carried spirochætosis in the northern half of Africa has, however, put a different complexion on affairs, and in countries like Darfur and the French Sudan, Senegal, Northern Nigeria, and the hinterland of the Gold Coast, health officers have had to fight the loathly louse as it was fought during the Great War. The mention of spirochætosis serves as a reminder that we must class ticks amongst our vermin, notably, of course, *Ornithodorus moubata*, the intermediate host of *Spirochæta duttoni*.

General Health Measures.

Here or elsewhere the question of ridding ships of rats, fleas, cockroaches, and other pests must be ventilated. Perhaps it is best to relegate it to a section which may conveniently have the general title "Health Measures," and in which, after brief accounts of the methods employed in combating such typical maladies as ankylostomiasis, schistosomiasis, cholera, dysentery and enteric fever, filariasis and malaria, leishmaniasis and phlebotomus fever, plague, sleeping sickness, small-pox, undulant fever, yellow fever and rabies, the lecturer should pass to the hygienic control of shipping and of pilgrims, of camps and plantations, of railways and caravan routes. Quarantine will form part of his theme, and he will expound international law as it affects this great question. To lighten his subject and to aid the student both in his memorising and in his understanding of the facts put before him the teacher may have recourse to literary excursions like the following alliterative jingle on the causes of enteric fever. I have already published it, but not in its latest form. Here it is: Careless contacts and convalescents, carrier cases (chiefly cooks), defective drains, doubtful dairies, dirty drinking water, the dust of dried dejecta, faultily-gutted fried fish, sewage-soaked shell-fish, soiled salads, and the repulsive regurgitation, dangerous droppings, and filthy feet of fæcal-feeding flies fouling food.

In connexion with malaria it is important, if possible, to give a little instruction on the sanitary engineering sides, for both minor and major works of "bonification," as they term it in Italy, have an important bearing on malaria control, and the health officer should be in a position to discuss such matters in an intelligent manner with the engineer.

The *hygiene of native labour* in the tropics will doubtless have been largely dealt with under the headings housing, food, and conservancy, but the subject is not easily exhausted, and, to cite one matter only which should not be forgotten, there is the prevention of pneumonia by guarding against chill. How frequently do coolies exchange the atmosphere of a hot sugar mill or negroes that of the warm, humid depths of a deep mine for comparatively cold evening air and suffer in consequence. The provision of sweaters, if their use can be enforced, is often of great value, but only occasionally do we find this cheap and simple measure in vogue.

Even with every refinement of hygiene death will reap his victims and so *disposal of the dead* is a subject which will occupy a few minutes. Something should be said about special methods employed by races inhabiting the tropics and, in addition, the student should be told how best to embalm a corpse, for nowadays it is by no means uncommon, particularly in American circles, to require the return of the deceased tourist, traveller, or man of business, and the remains must be transported in a hygienic state, otherwise there may be trouble in several directions.

Public Health Administration.

The course may suitably conclude with some remarks on public health administration and organisation in the tropics, though, if it is preferred, this may constitute the opening subject. Personally, I am inclined to think it comes best at the end when, from the knowledge he has gained, or at least from the facts put before him, the student is better able to appreciate the situation and to realise that the duties of a health officer in the tropics differ in many respects from those he has to perform, say, in England, and that various modifications are necessary both in the administration and the organisation of a public health department.

It is, of course, impossible to deal with all parts of the tropics from this standpoint, but there are certain difficulties and certain essentials common to all and, on these the lecturer, if he is wise, will concentrate. Above all things he should impress upon his hearers the value of trained and efficient sanitary inspectors, those links between the medical officer of health and the populace, those employees, worth their weight in gold if they are good, who deal with details and, in the tropics, more perhaps than anywhere else, everything depends on attention to details. The number of European sanitary inspectors must perforce be limited, and so the training of a native inspectorate in the principles and practice of hygiene becomes a duty which the health officer has to shoulder and which will, as a rule, well repay the time he devotes to it.

It is scarcely possible to deal in any way adequately with sanitary law as applied to tropical practice, but I think students should be advised to study the regulations in force in various countries. Especially should they consider ordinances relating to mosquito control and the milk-supply, for they will find that the proper wording of such ordinances is most important and that their advice will be sought on these points.

LENGTH OF COURSE.

Well, we have reached an end, and it will be asked, "How long should such a course occupy?" I believe it might with advantage extend over three months, but, as a rule, that will be found impossible, at least if it is combined with the instruction in tropical medicine which we have already considered. Here we devote about 35 hours to these subjects and spread the course over a period of three weeks. I admit this is not sufficient, but it does give the class a certain grounding in the subject, and by reading and museum work the students can supplement this instruction, though they will never get a proper grasp of it until they have been "through the mill," as we say, and learned, perhaps by sad, and certainly by useful, experience, how to adjust themselves to new conditions and how best they may serve in that high calling of which they must be both the exponents and the disciples.

LABORATORY WORK.

I have said nothing about public health laboratory work, the chemical analysis of water, food, sewage, and so forth. It is true that, in the tropics, the health officer may have himself to carry out any tests which he thinks should be performed for, save at large centres, there are not, as a rule, any public analysts. On the other hand, in many places chemical laboratories exist where such work can be done by a trained chemist who, as a rule, can perform it more efficiently than the medical officer. In the absence of the necessary chemical equipment the medical officer is powerless, and hence, in a course such as I have described, it would be futile to attempt to include a laboratory training in public health chemistry.

Where, however, men definitely intend to devote themselves to health work in the tropics, they should be in a position to understand the significance of an analyst's report, and will best be able so to do if they themselves have some familiarity with the methods of the chemical laboratory. Hence, if they have not been through the D.P.H. course, I think provision should be made for their instruction in certain aspects of public health chemistry and also in bacteriology from the hygienic standpoint. Indeed, this is more important than the chemistry, for tropical conditions

may modify bacteriological standards, as, for example, the *B. coli* test in water work. This laboratory training would seem to attain a greater importance now that the Colonial Office has decreed that the possession of the D.T.M. & H. will qualify a man to hold a health appointment in places and districts other than those where large populations are congregated.

Men intending to take up such appointments, or to devote themselves to public health work, should also be given some instruction in vital statistics and statistical methods, and should learn more about epidemiology than they can in the tropical medicine course.

It is no doubt impossible to attain perfection in teaching tropical hygiene outside the tropics, and it is difficult to find sufficient time to devote to it, but a measure of satisfaction may be attained, by teachers and students alike, if we act on the advice enshrined in the old saying from the Book of Tobit: "If thou hast much give plenteously; if thou hast little, do thy diligence gladly to give of that little."

ON THE COMPLICATIONS OF FRACTURES OF THE LONG BONES.

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THE disabilities which may follow a simple fracture of a long bone may be grouped under the following headings:—

1. Those affecting the bone itself, in the main purely mechanical; they result from failure to restore alignment or to maintain an alignment once restored. Whether they be classed as mal-union or as non-union does not affect the thesis of this paper, which argues that a vast majority of such results are preventable, and attempts to show why they occur and the principles on which their prevention should be based.

2. Those involving the muscles. Incorrect alignment of the fragments or involvement of tendon beds by callus alters the mechanics of their pull. These disabilities are exactly correlated with those of group 1, and are therefore equally preventable. Ossification of muscles is a very rare complication which may occur after fracture of the lower end of the humerus in childhood; but as, in my experience, it is directly attributable to rough handling and early passive movements, it is equally preventable, though by a different method.

3. Those affecting adjacent joints. Some of these are mechanical and, when due to simple causes such as the involvement of a joint surface by a misplaced fragment or by callus, are in most cases preventable, either by careful reposition by open operation of the intra-articular fragment so that exuberant callus which will hamper normal movement is not thrown out, or by removal of such a fragment when, owing to its size, position, or comminution, replacement is not practicable. By far the most common, depreciating, and incurable of the joint complications is that commonly termed chronic traumatic osteo-arthritis, which most of us have been accustomed to regard as an inevitable sequel of some fractures, particularly those is the vicinity of joints, in the middle-aged or aged. Yet we know that similar arthritic changes occur universally before the age of 21 in the hip-joints of those patients who in infancy have been subjected to manipulative reposition for congenital dislocation. Realising that this can best be explained on a mechanical hypothesis, we may venture the opinion that traumatic arthritis will occur only when the mechanics of the part are altered by a fracture, which is usually in close proximity to the joint, and that the mechanics are altered because alignment is imperfect. If this be accepted, we are forced to the conclusion that the arthritis is at least in part due to faulty alignment and is therefore preventable. This argument must not be pressed too closely, for it is conceivable that interference with the nutrition of the joint surfaces, owing to the injury, may be a factor of importance; that such a trophic influence does exist is shown in the marked atrophy with absorption of lime salts which occurs uniformly in the smaller fragment of these fractures.

4. Those due to nerve involvement; these are relatively rare and in common practice only comprise dropped wrist, due to musculo-spiral injury with fracture of the humeral shaft, and ulnar paralysis with fracture of the inner humeral epicondyle. I do not propose to discuss these fully, but must most forcibly insist that such paralyses are not, as most text-books state, due to involvement of the nerve by callus, but are due to its actual injury at the time of the accident by the force which caused the fracture, and that their pathology is an interstitial bruising which in most cases will recover, and will certainly do so provided the nerve is put under conditions which favour its natural capacity for repair. As it is at present impossible for any neurologist to suggest, even in the vaguest terms, the anatomical degree of nerve injury which exists in such cases, the surgeon must protect himself by the only means at his disposal and ascertain by direct inspection what damage has been done to the nerve in every case in which there is the least doubt—which means in almost every case.

First Principles.

Any attempt to discuss in more detail the prevention of the disabilities which are due to the fracture itself drives us to discuss first principles. The causes of displacement are the force which produces the fracture, gravity, and muscular pull. For some years the writer, in common with most other surgeons who have allowed themselves to think on such matters, has been teaching that the chief cause of displacement is the force which produces the fracture, and that the pull of muscles which may chance to be on one or other side of the fracture is not, as stated in most text-books, a very important factor in displacement; although after the fracture has occurred the natural tone of all muscles round the bone undoubtedly causes overlapping, and an unbalanced muscle or group of muscles may affect displacement. This is a fundamental assertion which governs most of what follows. Whenever one can exactly ascertain the direction of the force which caused a fracture, one finds that the displacement exactly conforms to this and, as the direction of the force may vary, so the displacement in any given fracture is not uniform.

Again, in our earliest surgical infancy we learn that transverse fractures are due to direct violence. They usually are, yet in many cases of transverse fracture the patients assure us that the blow was not direct, and this is confirmed by the absence of local injury to soft parts. A force great enough to break a bone directly must cause very grave damage to soft parts; yet in many fractures which are almost transverse no local bruising exists and we are forced to the conclusion that such fractures are examples of very short spirals and are caused by torsion. This view is supported and its scope enlarged by G. F. Stebbing's [1] hypothesis that fractures through the base of the neck of the femur are not caused by direct violence, but by torsion. Every surgeon sees several transverse fractures a year in which it is impossible to imagine how a force could be applied directly to the bone at that spot so as to cause the fracture. Whether direct or indirect, however, the force which causes a fracture cannot be supposed to cease immediately the fracture has occurred; its continuance causes displacement, and the greater it is or the longer it acts the more wide will be the separation of the fragments. The gap between the displaced bone ends must be occupied by soft parts, which are second only to sepsis as a local cause for non-union. The presence of soft tissues between fragments has long been recognised by two signs—viz., the absence of bony crepitus and the failure to restore alignment by manipulation

under an anæsthetic. To these I wish to add a third—an appreciable gap between the fragments as seen on an X ray plate. In my experience a gap of ¼ inch or more means the intervention of soft parts and forebodes non-union. It seems probable that the influence of intervening muscle is relative. A thin layer must intervene in almost every fracture; why, therefore, non-union does not occur more often, or how the offending tissues are got rid of, we do not know, but we must admit that the intervention of soft parts of a certain thickness is a sure barrier to the laying down of internal callus by osteoblasts from the bone-marrow.

I well remember in 1912 being astonished that the Fracture Committee of the British Medical Association so readily accepted the conclusion of their small drafting subcommittee, of which I was a member, that "a good functional result depends exactly upon a good anatomical result"; I have been still more surprised that the profession in this country and in the United States have never questioned this principle. These sensations, however, are mild compared with my horror at the almost daily examples of complete failure to carry it into practice. The more I see of fractures the more I am convinced of its truth and, after 15 years' test of its value, I am forced to admit that nearly all the bad results which I deplore in my own practice are due to a lapse from its logical employment.

Most of what is written above particularly applies to fractures of the lower third of the tibia, for, as has long been known, the mechanical defects of deformities resulting from fractures of the leg are indifferently compensated. Ashhurst [2] offers as an explanation of this that it is the only segment of a limb where the joints which bound it above and below carry out similar movement on identical axes.*

Reduction on the X Ray Table.

Even in hospitals to which large medical schools are attached the value of inspection and reduction of fractures under an anæsthetic on the X ray table is entirely unappreciated. Its chief value to the surgeon lies in an ocular demonstration of the maximum displacement, which is at once ascertained by rotation of the limb first in one and then in the other direction; this may disclose a far greater deformity than is shown by the plates or films usually taken as a routine in the antero-posterior and lateral planes. Scarcely less important is the advantage to the patient gained by observing under the screen that precise position, checked in two planes at right angles to one another, in which deformity is reduced to the minimum; it may at the time be impossible or unwise to fix the limb in the optimum position, but if this is known it can be readily achieved at the selected time. No one can study on the screen the optimum position for reduction in any series of fractures for six months without discovering the fact that in no two consecutive examples of what are apparently similar fractures is correct alignment secured in exactly the same position. In other words, each individual displacement has an individual position in which reduction of deformity is secured. This is only what commonsense would suggest, yet text-books describe stereotyped positions for every fracture, and witnesses in legal actions give evidence that a definite position is necessary for satisfactory treatment. How can witnesses who have not seen the fracture on the screen before treatment express an opinion on the optimum position—i.e., the particular pose that will secure correct alignment for this particular displacement?

Early Operation.

If we fail under ideal conditions to reduce the deformity on the X ray table, a second attempt is made; if this fails, we must realise immediately that some kind of operative reduction is necessary, and it is at this point that so many who treat fractures fail to carry into effect the principle which they know to be true, and rely apparently on the occurrence of some miracle by which the bad anatomical result which they know to be present shall be converted into a good functional one. A recent ununited fracture is as a rule easy to reduce during the first three weeks by open operation; and within certain limits a perfect anatomical reduction can be guaranteed if operation is done within this period; an operation for the correction of an old malunited fracture is often one of the supreme trials of manipulative skill, physical endurance, patience, ingenuity, and self-control. The most obvious advantage of early operation is that before new bone has had time to form and round off the rough broken ends, each little irregularity can be exactly fitted into its original place, and no time is taken up in breaking down a partial union. The bone ends become smoothed down after about three weeks, but I have recently found the line of fracture absolutely unchanged in a young man after 11 weeks; this is most unusual, especially in the young. Another advantage of early operation is the prevention of bone atrophy, which always occurs in the compact tissue of the smaller fragment, and is especially marked in the aged or alcoholic. It is of secondary importance, but any surgeon who finds himself faced with an operation on such a bone will take care to eliminate the risk in another case, for it is shown on X ray plates.

The indication for operative treatment is the failure to obtain or maintain reduction of displacement by manipulation. The phrase "reduction of displacement" can be otherwise expressed as restoration of alignment; it means that the fragments must occupy their normal positions and relationship to one another. How far this is necessary to sound union and functional efficiency is unfortunately a matter of opinion. "Unfortunately" is written advisedly, for, while it is agreed that end-to-end apposition of at least 25 per cent. of the fractured surface is desirable for firm union and that errors of alignment and angulation are readily overcome as growth proceeds in the young, yet beyond this there is a wide margin between what is deemed satisfactory by one and what is regarded as essential by another. All my experience tends to demand a more perfect anatomical result, for often the X ray plate has not been taken in the plane of maximum deformity, and displacements tend to get worse rather than better, particularly in the old and particularly in the leg.

Varieties of Operative Treatment; their Indications and Limitations.

1. The simplest form of operative treatment is reduction by leverage through an open incision without the introduction of any internal splint. This is particularly applicable to the common supracondylar fracture of the lower end of the humerus in children, fractures of the radius at the adolescent level, and separation of the lower femoral and upper humeral epiphyses. Many writers talk of operations on fractures as if internal splinting were always essential; of all forms of operation simple reduction is the most universally applicable, and it is far too rarely employed. Its use must be limited to transverse fractures, particularly where only one of two parallel bones is fractured, the other acting as a splint; or to fractures so near joint surfaces that an internal splint is impracticable. An open wound is no bar to this method, and in fact extends its range of usefulness, for, as infection may be unavoidable when reposition has been secured by open reduction, it is safer to rely on external splinting for the maintenance of position than to introduce unabsorbable internal splints.

2. The removal of detached fragments is a confession of failure, which is obvious when a fracture of the humerus complicating a dislocation of the shoulder-joint necessitates excision of the head. It must be admitted, however, that this is occasionally the only

* The leg is the only segment of a limb where the joints at both extremities of the bone are hinge joints.

practical procedure, and that the results are sometimes better than those secured by more conservative measures. Failure is less obvious when a small articular fragment is seriously comminuted, as is seen in stub fractures of the head of the radius, when excision is the only means available until such time as a suitable glue can be used.

3. Absorbable internal splints in the form of bone-grafts, whether homogeneous or heterogeneous, have, in my opinion, a very small field of usefulness and one practically limited to bridging a gap where a bone deficiency exists. I hold it as a fundamental principle in their use that they should not be subjected to stress or strain and that they must be secured; if this be true, they provide no alternative to internal unabsorbable splints, which are usually a necessary reinforcement.

4. I see no reason why some surgeons prefer an unabsorbable ivory peg to wire, screws, plates, and other metal appliances, except a lack of confidence in their surgical cleanliness. If exact restoration of shape and complete immobilisation is desired, there is no method which secures it in anything like so certain a measure in most long bone fractures as the use of plates and screws. I find no tendency for screws to loosen save in the presence of sepsis, which is almost always introduced by the operator. Though some of my cases were operated on more than 20 years ago, I see no reason for a routine removal of plates except in open fractures. Comminution, multiple fractures, and the proximity of less than two inches of a joint are an absolute bar to the employment of intramedullary pegs; the same applies, though to a less degree, to plates, though, when the main fragments are fixed together with a long plate, smaller fragments can usually be pushed into place, where they will remain.

Sometimes the problem is lack of union—e.g., a fracture has been immobilised for some six weeks and there is no sign on manipulation of solidification of the fracture. My practice is to treat the limb for another six weeks by complete immobilisation in plaster; whenever possible the patient walks on crutches, and a Bier's bandage round the thigh may help. If after this period there is no union, operation is indicated. I think these cases should be classified as cases of delayed union, and I have a suspicion that the usual cause of this delay is a thin layer of soft tissue between the bone-ends which the osteoblasts of the medulla have difficulty in permeating.

Conclusion.

The thesis of these remarks is that most, if not all, of the disabilities resulting from fractures of long bones are due to mal-union, the result of incomplete correction of displacement; that these are in the main preventable, and that the correct treatment of mal-union is prophylaxis. It must, however, be admitted that the period in which complete correction of deformity is possible must occasionally be allowed to elapse without any endeavour having been made to correct, owing to the very serious condition of the patient; but, unfortunately, this is not the excuse for the majority of bad results which surgeons are called upon to correct.

References.—1. Stebbing, G. F.: British Journal of Surgery, 1927, xv., 201. 2. Ashhurst, A. P. C.: Surgery, Gynecology and Obstetrics, 1922, xxxv., 662.

THE SERUM TREATMENT OF SCARLET FEVER.

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The benefits of scarlatinal streptococcal antitoxic serum in the treatment of scarlet fever are generally recognised, and an attempt is here made to compare the course and complications of the disease in cases so treated, with its progress in cases receiving identical treatment with the exception of the serum. Case records of 150 serum-treated patients at the City Hospital North, Liverpool, over a period of 15 months from 1925–27, have been collected and the results analysed. The serum was not used as a routine measure, but only for the more pronounced cases. As most observers note that the response to antitoxin after the fourth day of the disease is but slight the series have been divided into two groups—119 cases receiving antitoxin before the fourth day, and 31 cases receiving it for the first time after the fourth day.

Dosage.—Concentrated scarlatinal streptococcal antitoxic serum was used in each case, 10 c.cm. being injected intramuscularly in the vastus externus muscle. 137 of the cases received the serum prepared by the Lister Institute, 10 that of Messrs. Parke, Davis and Co., and 3 that of Messrs. Burroughs Wellcome.

TABLE I.—*Comparison of Serum-treated Cases in 1926 with Cases in 1925 and 1926 Receiving Ordinary Treatment.*

—	Serum-treated cases.		All cases 150.	Control cases.	
	Serum on or before fourth day: 119 cases.	After fourth day: 31.		1925. 120 cases.	1926. 120 cases.
Before serum: controls on third day. Average temperature	101·9° F.	101·5° F.	101·8° F.	99·8° F.	99·6° F.
,, pulse-rate	136 per min.	133 per min.	135 per min.	119 per min.	118 per min.
,, respiration	26 ,,	25 ,,	26 ,,	23 ,,	23 ,,
24 hr. after serum controls from third to fourth day. ,, fall in temperature	2·3° F.	1·7° F.	2·1° F.	0·7° F.	0·85° F.
,, fall in pulse-rate	17 per min.	10 per min.	15 per min.	8 per min.	9 per min.
,, fall in respiration	2 per min.	1 per min.	2 per min.	1 per min.	1 per min.
Average day temperature becomes normal	6th	12th	7th	7th	6th
Per cent. of cases with *no* complications	70	45	65	55	65
Per cent. of cases *with* complications—					
Adenitis	14	41	20	16	18
Otitis media	10	17	11	12·5	7·5
Rhinorrhœa	5	17	8	17	7
Arthritis	9	7	8	5	3
Nephritis	2	7	3	6	3
Bronchitis	1	3	1	2	2
Relapses	—	—	—	1	6
Case mortality (per cent.)	—	—	1·3	2·5	—
Serum rashes (per cent.)	—	—	10	—	—

Dose of serum: 10 c.cm. of concentrated serum intramuscularly. 11 per cent. of all cases received two or more injections.

and Co. 11 per cent. of the cases received two or more injections, the maximum number given being six injections.

Control.

The selection of an adequate control series was rather difficult, as all the more serious cases from November, 1925, were treated by antitoxin. Owing to seasonal variation in the incidence and virulence of the disease it was thought best to adopt two series of controls, each over a full year, one from the 1925 cases before the serum was used and one from the mild, non-serum treated cases of 1926. Accordingly the first ten cases admitted to the hospital in each month in 1925 and in 1926 were grouped and analysed, the results being shown parallel with those of the serum-treated group in Table I. As in the latter group the average day of serum administration in those cases treated before the fourth day was the third, the average temperature, pulse, and respiration rate on this and on the fourth have been noted in the control groups and the fall in each in the 24 hours tabulated for comparison with that in the serum-treated groups.

The classification of the nature of the disease and the age-distribution of cases are shown in Tables II. and III. respectively. The age-distribution is approximately the same in all groups. The type of disease in the 1925 control-group, during 11 months of which no serum was used, was more severe than that in the 1926 controls. Table I. shows that the fall in temperature, pulse-rate, and respiration-rate in the serum-treated cases is about twice that in the controls from the third to the fourth day, while the complications in the former group, except for suppurative otitis media and arthritis, are much the same as in the mild 1926 group and less than in the 1925 group. It is of interest to note that five cases of arthritis in the serum-treated group arose about the tenth day; though unassociated with a rash, they may be a manifestation of the serum administration rather than a complication of the disease.

Together with the fall in temperature and pulse-rate after the administration of serum, the patients exhibited marked subjective improvement and the pain and discomfort of anginoid conditions of the throat were greatly relieved. In 12 of the treated cases a profuse rhinorrhœa ceased very dramatically within 48 hours. The benefits of serum, in the dose employed in the present series, are less marked if given after the fourth day, but a temporary alleviation of symptoms was often noticed.

The good effects of the treatment are to some extent reflected in the mortality figures of scarlet fever admissions to hospital, which were 1·88 per cent. in 1925 and 0·75 per cent. in 1926.

TABLE II.—*Classification of Nature of Disease.*

—	Septic.	Severe.	Mod. severe.	Moderate.	Mild.
	Per cent.				
150 serum-treated cases ..	8	22	39	18	13
120 control cases—1925 ..	3	6	—	28	63
120 control cases—1926 ..	—	—	—	18	82

TABLE III.—*Age-distribution of Cases.*

—	0–5 yrs.	5–15 yrs.	Over 15 yrs.
	Per cent.		
150 serum-treated cases ..	32	57	11
120 control cases—1925 ..	30	59	11
120 control cases—1926 ..	30	66	4

Conclusions.

1. Scarlatinal streptococcal antitoxic serum, given early in the disease, causes a fall in the temperature, pulse, and respiration rates, relieves the subjective symptoms, and prevents the development of complications. 2. In the doses employed in this series no immediate benefits were noted in cases treated after the fourth day of the disease.

I am greatly indebted to Dr. R. I. Richardson, visiting physician, City Hospital North, for permission to make use of the hospital material and records, and also for much clinical advice and help.

MINOR TUBERCULOSIS.*

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Two decades of collective effort to eliminate tuberculosis justifies an attempt to review our conception of the disease.

The Victorian conception of tuberculosis may be summarised as: "A fatal disease; when recovery ensues the diagnosis should be revised." Then came what might be called the Edwardian conception: "A widespread disease as a pathological finding, but always dangerous, and often fatal, when causing symptoms." I would like to formulate a Georgian conception: "A widespread disease terminating usually in uneventful recovery among the highly resistant majority of the population, but dangerous to a minority with low resistance."

Minor tuberculosis, that is, tuberculosis as manifested in the highly resistant majority, occurs at one time or another in the lives of 40 per cent. of human beings. In busy private practice I often noted patients with one or two symptoms suggesting tuberculosis: a cough, wasting, lassitude, "run down," weakness, chest pains, or sometimes hæmoptysis. Under observation the symptoms almost always passed off, but rarely an individual patient developed typical phthisis pulmonalis. As tuberculosis officer, following in their homes the lives of some thousands of contacts, I am convinced that this minor tuberculosis is very real, and that recognition of its existence will clarify our ideas on tuberculosis, smooth out some differences of opinion among able observers, and perhaps provide a key to the whole problem.

A few instances may be given:—

CASE 1.—During the spring of 1916 a medical man of 38 was rejected for war service because an examining board detected pulmonary tuberculosis. The patient was tall and thin with sloping shoulders, the type described as "homo popleus." He had worked hard during the winter, and had suffered the last few months from a troublesome cough. His weight was 3–4 lb. below normal, and he had lately found work more tiring than before. There was a slight atrophy of the right upper trapezius with perceptible drooping of the shoulder. Dullness, diminished expansion, and a few crepitations were noticed at the right apex, or a few crepitations were also heard on the left side. The patient did not cease work, but took a few commonsense precautions, and has continued with no recognisable symptoms since the summer of 1916.

CASE 2.—A medical man of 51 was seen in the summer of 1918. He had felt ill and run down lately, and his habitual morning cough had become worse; there had also been fugitive chest pains. Ten days previously there had been a morning hæmoptysis of 3 oz. The patient was pale, thin, and rather haggard-looking; a few physical signs were present at the left apex, and dullness, with some pleuritic crepitations, at the right base. I pressed him to take a holiday; he refused, but became much more careful than in the past. At 59 he continues frail, but there have been no further symptoms of importance, and he is still in active practice.

CASE 3.—A doctor's daughter and lady dispenser, aged 23, came for advice because she had expectorated a mouthful of blood; there was also a dry cough, occasionally troublesome. The patient's father had died from tuberculosis, and

* From a paper read before the Plymouth Medical Society.

a few years previously she had nursed and slept in the same room with a cousin who subsequently died of phthisis. The patient was active, frail, and thin, with a slight stoop; there was dullness at the apex of the right lower lobe. It was difficult to decide what advice to give; she was allowed to continue work under observation and an improved régime. Four years later she married, and remains well after 12 years of married life, during which she has borne three children.

CASE 4.—A school teacher, aged 26, had signs and symptoms suggestive of tuberculosis, and the sputum, on the one occasion that it was obtainable, contained tubercle bacilli. A short holiday and a few adjustments were the only treatment. Fourteen years later she continued to work regularly without symptoms.

Among children tuberculous manifestations are also common—e.g., failure to thrive, prolonged pyrexia, gastric troubles, and sometimes cough. The following history, sometimes heard in chronic adult pulmonary tuberculosis, illustrates the difficulties which occasionally arise: (*a*) as a child prolonged pyrexia labelled typhoid, rheumatic fever, or influenza; (*b*) from 15 to 20, tonsils removed for bad health, perhaps more than once; (*c*) about 22, an attack of pleurisy; (*d*) at 24, appendicectomy; (*e*) at 28, all teeth removed, and perhaps a course of vaccine therapy; (*f*) at 32, phthisis diagnosed.

Minor Tuberculosis and the Work of the General Practitioner.

The suggestion that the great majority of tuberculous lesions discovered at autopsy have given rise to symptoms during life is borne out by experience in other diseases. A large percentage of autopsies reveal gall-stones; it was once thought that most of these had been symptomless, but now that we are beginning to recognise the symptoms they may cause, it seems probable that very few cases, if any, are really symptomless. They constitute a proportion of those dyspepsias which it is the lot of general practitioners to treat. The duodenal ulcer which perforates without previous symptoms is also becoming a great rarity now that the symptomatology is better known.

There is a tendency for symptoms to go unrecorded, and sometimes unnoticed, when their cause is unrecognised. The study and coördination of such symptoms is essentially the scientific province of the general practitioner.

The existence of minor tuberculosis is increasingly recognised. Some speak of latent tuberculosis, but this does not seem the best word when symptoms are present. Others call the condition a tuberculous infection, as opposed to tuberculous disease, but the difference between the two is of degree only. To me "minor tuberculosis" seems a better phrase.

Once the condition is fully recognised it must modify our work and teaching in many directions. Statistics are incomparable when one observer includes minor cases and the other only the graver ones. In conjugal tuberculosis, for instance, if minor disease is included, an infection will be found in the majority of cases, but if our attention is limited to major cases, occurring in the 2 per cent. of the population who have low resistance, conjugal infection becomes rare. Similar remarks would apply to any estimate of infectivity in tuberculosis, and to sanatorium statistics. If the patients sent to sanatoria are always to be "early" cases a number of minor cases will be included, and these could quite well be treated at home.

For practical purposes sputum-positive cases are all major, so that statistics based on sputum tests are comparable; but these constitute only a portion of the tuberculosis literature.

Allergy and Pneumococcal Infections.

Besides minor disease, two other factors modify our conception of tuberculosis: allergy and other pulmonary infections.

Koch's phenomenon is well known. A guinea-pig infected for the first time with tubercle bacilli may die of the disease, but show no local signs at the site of inoculation. If, however, after a sublethal dose of bacilli, a second injection is given, there is a violent local reaction which often results in sloughing. The animal is said to be in a state of allergy. Tulloch and Munro have shown that by thus sensitising a guinea-pig we may simulate the fibro-caseous phthisis of human beings. It seems likely that the easily recognised, typical phthisis of man is the result of some such sensitisation, the pathological and clinical pictures depending largely on the degree of allergy. Therapeutically just the right amount of allergy should be our aim, so that there will be a reaction at the site of infection, but no breaking down.

Inseparably connected with the tuberculosis problem are other forms of pulmonitis, especially pneumococcal infections. Tuberculosis disposes to catarrhal infections and these dispose to tuberculosis. This, indeed, is the greatest difficulty in diagnosis. We read strongly worded opinions that patients with bronchitis must not be called tuberculous, and opposing views are also held. A way out might be found by speaking of "catarrhal pulmonitis" and "tuberculo-catarrhal pulmonitis." In the diagnosis of pulmonary tuberculosis the chief erroneous tendencies are, on the one hand, in patients only slightly ill to diagnose minor tuberculosis as something else, and, at the other end of the scale, in patients obviously ill, to diagnose chronic pneumococcal infections as tuberculous.

A LOCALISED OUTBREAK OF BACILLARY DYSENTERY IN SMETHWICK.

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AND
EWART W. EVANS, M.R.C.S. ENG.

DYSENTERY has not been a common disease in England since public health principles have been widely applied, but in the seventeenth and eighteenth centuries the "bloody flux" was one of the formidable diseases of this country, as is shown, for example, by the Bills of Mortality of that period for the City of London. After the war it was thought that demobilised soldiers from abroad would reintroduce infection, and dysentery was made compulsorily notifiable under the Public Health (Pneumonia, Malaria, Dysentery, &c.) Regulations, 1919, in order that the authorities might have adequate control over these diseases, and give prompt assistance in combating possible epidemics. This policy has proved a wise one, and several epidemics, small and large, have been investigated and checked. The number of notified cases of dysentery and deaths registered since the adoption of compulsory notification in England and Wales is as follows:—

Year.	Cases notified.	Deaths registered.			
		Total.	Bacillary.	Amœbic.	Other or unspecified.
1919	1638	435	?	?	?
1920	1169	254	?	?	?
1921	1193	261	17	11	233
1922	757	216	21	10	185
1923	458	149	12	13	124
1924	356	130	13	8	109
1925	293	135	13	11	111
1926	486	142	11	14	117

It will be seen that the numbers have diminished considerably during the last four years. The type has, in the great majority of cases, been bacillary, although the above table does not sufficiently indicate this. Amœbic dysentery has apparently never prevailed much in England; the climate or other conditions, for some obscure reason, are unfavourable to the propagation of this type, although healthy "carriers" of *Entamœba histolytica* are not by any means uncommon. Since the war several outbreaks of dysentery in England and Wales have been

nvestigated by medical officers of the Ministry of Health, and very complete records of their findings have been published in official reports.

Bacillary dysentery, before the war, was largely confined in this country to circumscribed outbreaks n lunatic asylums and similar institutions.

The interest of the outbreak here described lies in he completeness with which it was possible to trace he ætiology and correlate the various findings, and n certain individual features. No instance of lysentery had been reported in Smethwick since 1924, when one isolated case was notified, and since 1919 only 20 cases are known to have occurred ocally amongst a population of over 75,000.

The outbreak which occurred at the end of July nd the beginning of August, 1927, was limited to he families residing on the first and second floors f a tenement house in Smethwick. The symptoms, ncluding pyrexia and the frequent passage of stools ontaining blood and mucus, were typical of acute acillary dysentery. There were ten cases, the first eing a child, attacked on July 22nd. The others ollowed rapidly, and all had similar symptoms, lthough they varied in degree; at least four of the atients were severely ill. There was no evidence uggesting case-to-case infection, and there were no eaths.

When the cases were reported to the local public ealth department every probable source of infection as investigated. The only common factor was the ater-supply. The water consumed by all the ufferers on these premises had been taken from the athroom tap connected with the hot-water system, nd the water had not been heated for many months. his water, derived originally from the main town upply, was fed into an uncovered iron tank through ball-tap valve and was passed through a cast-iron oiler and a closed iron cistern before reaching the ap from which it was drawn. The connecting pipes ere made of galvanised iron. This supply had been sed for some months because the main water tap as out of order. It was evident that the open tank ad become specifically contaminated. The families esiding on the ground floor used water from a eparate tap connected directly with the main, and ll escaped dysentery. The infection was confined to he women and children in the house; presumably he men took their liquid refreshment at work or utside their homes. One of the men volunteered the tatement that he had never drunk the water from his tap as he always thought it had an unpleasant aste; he escaped infection.

Other lines of investigation and possible sources of nfection were not overlooked, but there was no vidence that they had any connexion with the utbreak.

After a sample of the contents had been taken, he use of the water from the open tank system was rohibited; the tank and cistern were flooded with isinfectant, and no further case of dysentery occurred.

The bacteriological investigations were undertaken y Prof. C. J. Lewis, director of the public health aboratory of Birmingham University. Specimens of eces from five of the patients were cultured, and a ysentery bacillus of the Flexner type was isolated om each. Blood specimens from the earlier cases ere examined for the Widal reaction, and reported egative for *Bacillus typhosus* and *paratyphosus*. The lood serum of one of the patients was tested against ne organism previously isolated from her own eces, and agglutinated in a dilution of 1 in 40.

The residuum of water and deposit from the open ank was examined and intestinal bacilli of the oliform type and spores of *Bacillus enteritidis porogenes* were found, thus demonstrating previous ecal contamination. Actual dysentery bacilli were ot isolated.

Our search was now directed towards the primary carrier," and inquiry showed that a member of ne of the affected families was an ex-soldier who had erved in the Near East during the war and who ad been in hospital suffering from dysentery and malaria in Salonica in 1918. Although he was still liable to attacks of malaria, he had not, as far as he was aware, had any recurrence of diarrhœal disease since his discharge from the army and return to England, nor did he contract dysentery during this epidemic. His blood serum was tested for agglutination against several organisms, and proved negative for the typhoid group, but positive in significant dilutions for one of the types of bacillus which had been previously isolated from the fæces of the patients. The agglutinins produced by his antityphoid inoculations during the war had thus disappeared. His cultivated fæces were at first negative for cysts or pathogenic organisms, but from a second fæcal specimen obtained a few days later, and plated on MacConkey's agar medium, a colony of non-lactose fermenters was isolated, and gave the cultural reactions of the *Bacillus dysenteriæ* of the Flexner type. This may be regarded as a satisfactory result considering the well-known intermittency of excretion of bacilli among dysentery "carriers."

Thus the chain of infection appears to have been traced completely, and little doubt is left that the disease was spread through the agency of the tank water, which had in turn been specifically infected from the dysentery "carrier" living in the house. It was obviously not possible to determine the exact manner in which the tank water became contaminated from the "carrier," but the only available water-closet inside the house, used by all the families concerned, was in a dirty and neglected condition. Rats had been seen, and flies and mice were prevalent on the premises, and would suffice to provide adequate transport for the infective fæcal material between the water-closet and the unprotected open tank.

Our reason for publishing a short summary of this outbreak of bacillary dysentery is to call attention to the danger of using for drinking purposes water derived from the usual type of hot-water system so frequently installed in private houses and commonly regarded as innocuous.

One other noteworthy point is the length of time, in this case nearly ten years, during which a "carrier" of dysentery may remain a potential source of infection to others in his immediate surroundings.

THE EFFECT OF INTRAVENOUS AND INTRAMUSCULAR INOCULATIONS OF NOVASUROL IN RABBITS.

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Novasurol is an organic mercury compound and consists of a double combination of the sodium salt of oxymercurio-o-chlorphenoxylacetic acid with diethyl-malonyl-urea. It is claimed to be a powerful diuretic, absolutely free from irritant properties, and therefore equally suitable for intravenous and intramuscular injection, especially in cases of morbus cordis associated with dropsy.

At the request of one of my colleagues four rabbits were inoculated intravenously and intramuscularly with various doses of the drug; the histological findings seem worthy of report. The inoculations were made as follows:—

A.—0·02 c.cm. novasurol intravenously on alternate days for three doses and the animal killed three days after the last inoculation.

B.—0·02 c.cm. novasurol intramuscularly into the thigh on alternate days for three doses and the animal killed three days after the last inoculation.

C.—0·02 c.cm. novasurol intravenously—

0·03	c.cm.	,, ,,	three days later.
0·05	c.cm.	,, ,,	two days later.
0·1	c.cm.	,, ,,	two days later.
0·3	c.cm.	,, ,,	three days later.
0·7	c.cm.	,, ,,	two days later.

D.—Received the same quantities as C, with the same intervals between doses, the inoculations being made into the muscles of the thigh. Rabbits C and D were killed two days after the last inoculation.

The doses given to A and B were considered to be approximately equal, weight for weight, to the dose for a child. The larger doses in the case of C and D were given to ascertain if any lesions that might be produced in A and B could be intensified.

Histological examinations were made from the liver and kidney in all four cases, and from the muscles at the sites of inoculation in the case of B and D, and showed the following :—

A.—Liver : A considerable degree of cloudy swelling throughout, the outlines of the cells for the most part being quite obliterated ; this change is more marked in the centres of the lobules. The nuclei stain poorly. Blood-vessels and capillary spaces congested throughout. Kidney : Considerable cloudy swelling throughout both the convoluted and straight tubules ; in many cases the cells are completely separated from the basement membrane. The organ is congested throughout.

B.—Liver : Some cloudy swelling ; great distension of the capillary spaces, many of which are filled with blood. Vessels congested. Kidney : Cloudy swelling throughout ; in many places the lumen of the tubules is completely filled with finely granular cytoplasmic debris. In places there is great separation of the tubules. The organ is congested and many glomeruli appear somewhat disintegrated. Muscle : Along the track of the needle there is considerable congestion and a well-marked fibroblastic reaction with numerous giant cells ; muscle-fibres are almost entirely absent. On either side of the needle track the muscle is degenerated, the nuclei having disappeared and the fibres being hyaline in appearance.

C.—Liver : Cloudy swelling with slight fatty degeneration in places ; vessels and capillary spaces congested throughout. Kidney : Glomeruli congested, and the majority show some vacuolation. Large numbers of convoluted tubules show either absolute necrosis or very marked cloudy swelling ; a few appear fairly healthy. Many are filled with a hyaline substance. The straight tubules appear relatively healthy, some show cloudy swelling and degeneration, some contain a hyaline substance.

D.—Liver : Marked degeneration. Throughout the section the cell walls of the liver cells form an open network, in the meshes of which lie very poorly staining nuclei and some granular cytoplasmic debris. Kidney : Some glomerular congestion. Marked cloudy swelling of the convoluted tubules, but no areas of necrosis. The straight tubules show great destruction of cytoplasm, in many cases the nuclei lying free on the basement membrane. Capillaries rather congested. Muscle : There is an extensive area of completely necrosed muscle, the nuclei having disappeared. Large streaks of hæmorrhage are present, apparently along the tracks of the needle. At the periphery of the necrotic area is a well-marked inflammatory reaction, and in places considerable fibroblastic infiltration.

These sections show that novasurol may have a very profound action on the healthy liver and kidneys of rabbits ; since in chronic heart disease the liver and kidneys are affected to a greater or less degree this fact may be of importance. In chronic heart disease the central portions of the lobules of the liver are most severely affected by the back pressure, and the experiments show that this is the portion of the liver on which the drug exerts its greatest effect. It would seem advisable, therefore, that in cases of long-standing heart disease where there is a possibility of damage to the liver through back pressure, the dose of novasurol should be much reduced. In such cases the kidneys also may become damaged, and the experiments suggest that if there be any nephritis or albuminuria the drug is contra-indicated, or at least should be given only in very small doses. The drug appears to have considerable irritant properties ; no ill-effects, however, were observed at the sites of inoculation of the intravenous doses. It thus appears, as far as can be judged from animal experiments, that the intravenous route is superior to the intramuscular.

Summary.

Animal experiments suggest that in cases of long-standing heart disease the dose of novasurol should be considerably reduced, and that intravenous inoculation is more advisable than intramuscular.

Clinical and Laboratory Notes.

A CASE OF SPASMODIC AURICULAR FIBRILLATION AND BRONCHO-PNEUMONIA COMPLICATING SEPSIS IN THE PUERPERIUM

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THIS case is considered worthy of record for several reasons. It is one with which any general practitioner might suddenly be confronted, and with which he might have to deal without a specialist opinion and the primary treatment was carried out at a hospital not equipped with special cardiological apparatus, the writer having no special experience in the newer cardiology. The prognosis was very poor. Leyland Robinson [1] gives 13 deaths out of 16 cases of auricular fibrillation following parturition and G. J. Langley [2] gives one death out of three cases, while the other two responded badly. Many other authorities quote statistics, but do not fully differentiate the types of cardiac case. A search of the literature revealed no case of recovery of severe auricular fibrillation when complicated by broncho-pneumonia. Lastly, the case seems to afford a convincing argument in favour of large doses of digitalis in the treatment of auricular fibrillation. Although the patient never had any blood infection she was seriously ill from pelvic sepsis, and hæmolytic streptococci were found in her cervical canal. In addition, there had been a breakdown in the cardiac mechanism on at least one previous occasion auricular fibrillation had been present for at least four days before the treatment was initiated, and there was a fairly marked degree of broncho-pneumonia. It is therefore all the more remarkable that, within 12 hours of the administration of this large dose fibrillation ceased, and no apparent cardiac irregularity could be detected until 12 hours afterwards although the pulse-rate was taken at the apex at half-hourly intervals during most of that period.

The patient, aged 41, was sent into Monsall Hospital on March 5th, 1927, by Dr. L. J. Shaw with a diagnosis of puerperal pyrexia. She had had an apparently normal confinement on Feb. 23rd, ten days previously. She had had auricular fibrillation and broncho-pneumonia for two days before admission. There had been three previous confinements and two miscarriages. There was also a history of rheumatic fever in 1902 and 1910, and of a breakdown in the cardiac mechanism with associated œdema following the previous confinement.

Condition on Admission.—The patient was extremely cyanotic and collapsed, with a typical irregular pulse. She had a troublesome cough with frothy mucopurulent sputum, but there was no hæmoptysis. There were definite signs of broncho-pneumonia at both bases, especially on the left side. The possibility of pulmonary infarcts was ruled out, as the two lungs appeared to be symmetrically affected. There was a definite pleuritic friction rub in front of the area of the apex impulse. The apex-beat was just outside the nipple line and the first sound was completely replaced by a murmur, while there was also a well-marked diastolic murmur. There was a very definite increase in hepatic dullness. The urinary output was extremely low, with slight albuminuria. There was marked tenderness in the lower abdomen. The uterus was fairly well involuted, but with marked bilateral parametritic infiltration. There was a little sanious and slightly offensive leucorrhœa.

On the following day there was a definite improvement in the rhythm of the pulse, but the rate remained irregular. A culture from the cervical canal revealed hæmolytic streptococci, but a blood culture proved sterile. On March 7th the condition of the patient was precarious. It was decided to use Eggleston's method of massive digitalis administration,[3] the large dose being indicated by

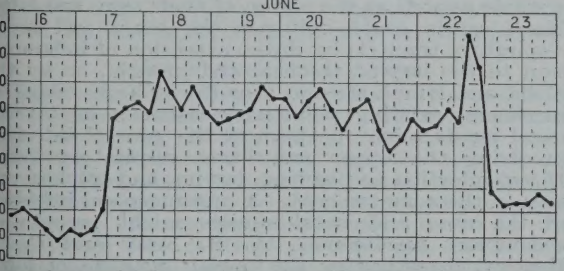
[1] THE LANCET, 1927, i., 170.
[2] Brit. Med. Jour., 1927, i., 1043.
[3] Jour. Amer. Med. Assoc., 1920, lxxiv., 974.

he complete cardiac breakdown with orthopnœa and other omplications. The basis of calculations of dosage is ·15 c.cm. of the tincture of digitalis per pound of body-veight. Unfortunately, the body-weight and the allowance or previous dosage (approximately gr. 1/60 digitalin very four hours for three days) could only be roughly stimated. Fortunately the early toxic symptom of vomiting ould be relied on to protect the patient from an over-lose. After some trepidation 250 minims of a tincture of ligitalis of known potency was administered, without ubsequent vomiting.

On the following day the patient was much more comfort-ble, the pulse varied between 110 and 90, and was 100 per ent. improved in volume. There was only occasional ardiac irregularity (two or three irregular beats followed y 10 to 12 regular ones) and there was a definite typical ough, presystolic murmur. The pleurisy was not spreading. nd the broncho-pneumonia improved on the right side, ut remained about the same on the left. The sputum became ummular and less frothy. The urinary output increased rom 25–50 oz.; there was still a good deal of offensive eucorrhœa.

On March 9th the patient's colour had improved markedly, nd the pulse was of excellent volume, and only very ccasionally irregular. The presystolic murmur was not early so obvious. The broncho-pneumonia on the right ide had apparently gone, while the left lung was much learer. There was no trace of any pleurisy. The cough was ess troublesome and the sputum still nummular but less rothy. The urine was clear, but there was still a fair mount of sanous offensive leucorrhœa.

On March 11th the pulse was absolutely regular, with a ate of about 70. There was still a small patch of tubular reathing over the left lower lobe posteriorly. On larch 15th, one week after the administration of the dose, was realised that its beneficial effect had reached a naximum, but, as the pulse remained regular at 70–80 and ne urinary output remained about 66–70 oz., the patient



Pulse chart including the period June 17th–23rd during which the patient had auricular fibrillation.

as allowed up, without ill-effects. Five days later the ulse became slightly irregular, and the patient was put n tinct. digital. ℥ v. t.d.s. This was increased on larch 22nd to ℥ xv. t.d.s. During this period the inflamma-ry conditions in the pelvis were gradually settling down, nd on March 30th the offensive leucorrhœa ceased.

On April 8th the patient was discharged. She had a ell-marked presystolic murmur, and the apex-beat was the nipple line. The pulse-rate was between 80 and 100, t absolutely regular, and the patient's exercise tolerance as better than it had been for the last 15 years. The elvic organs were healthy, except that the uterus was alled over to one side of the vertical axis. The lungs ppeared normal, but the liver still extended down to near ne umbilicus, being partly enlarged and partly ptosed. igitalis, once utilised, must be continued,[4] so the patient as referred to the cardiac clinic at Ancoats Hospital, here Dr. G. J. Langley found mitral stenosis, stage II., ith definite murmur and thrill, but without fibrillation. n electrocardiogram taken on April 8th shows normal ythm of the heart with the auricular waves clearly marked nd the spacing regular.

One month later she was much worse, being cyanosed and yspnœic. Her auricle was fibrillating at 120 per minute nd was grossly irregular. A full diastolic rumble was still resent, but no presystolic thrill could be detected. She as admitted on May 31st for observation. Her heart mained regular until the period for which the temperature hart is shown, when her auricular fibrillation became asmodic in type. She had a sudden onset of auricular rillation at 10 A.M. on June 17th, and four hours later er pulse had risen to 120. In an electrocardiogram taken on this day the auricular waves have disappeared, the rhythm has become completely irregular, the ventricular complexes are unequal in size, and the usual undulations of fibrillation are visible in lead III. She remained in this condition until June 22nd at 10 P.M., when 13 tablets, each equivalent to 1 c.cm. of tincture of digitalis, were administered. The rate fell from 150 (after atropine release) to 72, at 4 A.M. on June 23rd, after which it remained regular until discharge (see chart).

Digitalis, although fully competent to control auricular fibrillation, has no power to reinstate a normal rhythm, and the accompanying chart gives the explanation, the onset and offset of the tachy-cardia due to auricular fibrillation being absolutely sudden and spontaneous.

In conclusion, I wish to express my indebtedness to Dr. D. Sage Sutherland, medical superintendent, Monsall Hospital, Manchester, for permission to publish this case; and to Dr. G. J. Langley, physician to Ancoats Hospital, for permission to utilise his notes of the subsequent history of the case.

[4] Mackenzie: Diseases of the Heart, 4th edition, p. 205.

A CASE OF NERVE PALSY.

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THE following case is, I think, worthy of record.

A labourer, aged 32, gave a history of pain in the outer side of the left leg occurring during a game of football, but not referred to any definite injury during the game. He says his "knee gave way," and this was followed by a dull pain which was not severe. He finished the game and walked home without much discomfort. The pain became worse and he was seen the following day.

When examined, the outer side of the left leg, about 2 inches below the head of the fibula, was red, swollen, stony hard, and tender. Pain was also present on the dorsum of the foot. There was no sign of bone injury. He was unable to dorsiflex his ankle or to abduct his foot. He thus had "foot-drop," the muscles chiefly affected being the peronei and extensor digitorum longus. There was no wasting and no loss of sensation. The X ray showed no abnormality. The only diagnosis was palsy of the anterior tibial nerve, due to rupture of fibres either of the peroneus longus or extensor digitorum longus, with a deep hæmatoma compressing the nerve, either as it passes between the head of the fibula and the peroneus longus or as it passes beneath the extensor digitorum longus. Under massage and electrical treatment he is slowly improving. It is surprising that he had so little pain with such a marked lesion.

My thanks are due to Dr. J. R. Dick, hon. surgeon to Scarborough Hospital, for the X ray examination.

A CASE OF
CYSTIC PNEUMATOSIS OF THE BOWEL.

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THIS condition was the subject of the presidential address delivered by Mr. Cyril A. R. Nitch before the Section of Surgery of the Royal Society of Medicine in November, 1923.[1] The disease is analogous to intestinal emphysema of swine. In these animals it is the rectum, jejunum, and mesentery which are most commonly affected, and the disease is seen chiefly on the mesenteric border. In pigs it is always associated with an intestinal catarrh. In man the disease is rare, only about 85 cases having been previously recorded. It is associated with constipation, and usually there is an organic stricture of some portion of the intestinal tract. It has invariably been discovered either at operation or at post-mortem examinations. The commonest coexistent lesion is either gastric or duodenal ulcer, and of these about 83 per cent. have shown stenosis.

[1] British Journal of Surgery, 1924, xi., 714.

Males are affected in the ratio of three to one, and the ages range between 13 and 60 years. It is seen most often in the ileum, near its termination on the anti-mesenteric border, but it may affect any other part of the intestinal tract, most rarely the rectum, duodenum, and appendix. The large bowel is frequently involved, the disease stopping at the splenic flexure. As a rule, the bowel is affected for a considerable distance, but the disease may occur in isolated groups separated by normal bowel. The cysts are usually sessile, but may be pedunculated; they are situated in the subserous and submucous layers and are seldom seen either in the muscular coat or mucosa. They rarely communicate with the lumen of the bowel or with each other.

Histologically, there is an endothelial lining containing a number of giant cells (suggesting chronicity). Small round cells and other signs of inflammation are absent. There is a chronic hyperplastic endolymphangitis, which suggests that the condition is one of gas-containing spaces formed in the lymphatics, rather than clefts in the connective tissue.

Cultures from fresh specimens have been negative. The gas consists of a large percentage of nitrogen, as well as oxygen, carbon dioxide, and a little hydrogen. Second operations have shown that the cysts disappear spontaneously, leaving a typical cicatrix.

The theories of causation, as investigated in swine, are three in number.

1. *Bacterial.*—Jaegar cultivated what he believed to be a specific organism, *Bacillus coli lymphaticum aerogenes*, which entered the submucous lymphatics through a chronically inflamed mucous membrane.

2. *Hæmatogenous.*—John Hunter suggested that the gas escaped from the blood, either from natural causes or through diseased blood-vessels.

3. *Mechanical.*—The gas being forced into the intestinal wall through an abrasion in the mucosa.

The absence of signs of inflammation, the fact that there are no adhesions nor lymph, and also that no specific organism has been cultivated in man, all tend to disprove an infective origin. The majority are due to mechanical causes. Air enters through an abrasion in the mucous membrane and so gains the lymphatic network, and is driven along by constant pressure and by peristalsis. The irritation of the gas leads to an obliterating endolymphangitis, and so cysts are formed. The constant pressure and high tension of the air are maintained by the vomiting and flatulence of the associated lesion (ulcer).

The cysts are best left alone, as they tend to disappear spontaneously. Crushing or puncture is dangerous, as the bowel may perforate from the resulting weakness.

On Sept. 5th, 1927, a sparsely built man, aged 40, was admitted to the North Staffordshire Royal Infirmary with the following history.

He had complained of "indigestion" for years. This took the nature of pain in the epigastrium immediately after food, followed by vomiting, which relieved the pain. There was no hæmatemesis. The usual remissions were present; the appetite was fair, and he was not losing weight. He suffered from constipation. At 6.30 A.M. that day he was getting dressed, when he had a sudden pain in the epigastrium. He vomited and collapsed, and was brought to hospital.

Examination revealed obvious signs of a perforated gastric ulcer. He was operated upon by Mr. Reginald Alcock. On opening the abdomen much slightly turbid fluid was found. There was a perforation on the anterior surface of the stomach about 1 inch from the pylorus. This was surrounded by a large area of induration, rendering oversewing of the ulcer difficult. Further examination showed a curious condition in a loop of small intestine. For about 9 inches the gut seemed to be replaced by vesicles containing air or gas. Some of these were punctured, but no fluid escaped. A little further on were two small buds of the same cystic nature, about the size of a cherry. Excision of the loop was inadvisable, on account of the serious condition of the patient. A lateral anastomosis was performed and the abdomen closed with drainage in the usual way.

The patient was expected to perforate at the site of the vesicles and die, but he made an uninterrupted recovery, and left the hospital seemingly fit. He returned, however, complaining of incessant pain and vomiting, so was readmitted for a gastro-jejunostomy.

On Nov. 29th, 1927, he was again operated upon by Mr. Alcock. The induration causing pyloric obstruction was still present, so a post-gastrojejunostomy was performed, and the appendix was removed. The site of the lateral anastomosis was slightly adherent, but there was no trace whatsoever of the vesicular condition, the bowel being roughened and cicatrised. The patient is still in hospital, and is progressing very satisfactorily.

I am indebted to Mr. Alcock for permission to publish this case.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

COMBINED SECTIONS OF LARYNGOLOGY, MEDICINE, AND ODONTOLOGY.

INFLUENCE OF NASO-ORAL SEPSIS ON THE LUNGS AND GASTRO-INTESTINAL TRACT.

THESE combined Sections met on Jan. 11th to discuss the above subject, Mr. HAROLD BARWELL (President of the first-named) being in the chair.

The Laryngologist's Point of View.

Mr. E. D. DAVIS said that laryngologists were still somewhat backward in calling in the aid of the physician, and he hoped that the discussion would encourage them to regard the patient's condition as a whole as well as the region of their own specialty. Nasal sepsis could influence the lungs and lower respiratory tract (1) by direct extension of inflammation to the larynx, trachea, and bronchi, or by the blood and lymph streams; or (2) by aggravating or increasing existing pulmonary lesions; or (3) the nasal sepsis might be part of the general infection involving the upper and lower respiratory tract. Direct infection to pharynx, larynx, and trachea was seen in the common cold. A pneumococcal infection of the nose and nasal sinuses might precede or accompany pneumonia. A. R. Felty and C. A. Heatley, investigating the causal organism of lobar pneumonia in 16 cases, showed that pneumococci of corresponding type occurred also in the patients' nose; and in five were also found in the blood. Where there was profuse suppuration in the nasal sinuses the pus streamed down from under the soft palate and collected in the lower pharynx below, behind the arytenoid cartilages, and in the pyriform fossæ. This pus was always swallowed, and he had never seen it in the larynx or trachea, though he had frequently searched for it; its entry was prevented by the ciliated epithelium and by the cough-reflex. The cleansing power of the trachea was enormous, and experimental attempts to produce pneumonia by introducing cultures into the naso-pharynx failed unless large doses of a high virulence were used. Still, a direct spread of the inflammation to the larynx and trachea often accompanied nasal suppuration, and was helped by the coughing and hawking. Investigations in America showed that infection could extend by the lymphatics to the chest. When an inflammatory condition of lungs already existed it was certainly aggravated by nasal sepsis, and tuberculous patients had no resistance to pyogenic and catarrhal infections. Suppuration in the sinuses sometimes followed bronchiectasis and bronchitis.

Looking through the notes of 100 of his cases of nasal sinus suppuration, Mr. Davis found that in 9 the infection was confined to the nose, whilst there were four patients with bronchitis, one with bronchiectasis, two with asthma, one with abscess of the lung, one with colitis, and one with duodenal ulcer. It was likely, however, that some of the 90 patients would later have secondary pulmonary infections. Of 474 cases of definite pulmonary tuberculosis which

he had investigated at Mount Vernon Hospital, only five showed nasal sinus suppuration, but there were 11 with atrophic rhinitis and five with nasal polypi without suppuration. It was difficult to prove that chronic suppuration in the sinuses was a cause of bronchiectasis; but Dennis reported 24 cases of bronchiectasis in which the condition was present, being improved in 16 by treatment of the nose. In his own experience gastro-intestinal infection arising from the nose was rare. Septic teeth, he thought, were more likely to affect the gastro-intestinal tract than was nasal sepsis. A case of chronic suppuration of the nasal sinuses should be regarded as a potential pulmonary case, and general as well as local treatment should be started.

Mr. C. A. S. RIDOUT said that children were often sent to his clinic from the municipal tuberculosis clinic, who had general debility with bronchial signs, such as crepitations, possibly with night sweating and enlargement of cervical glands, but in whom no tubercle bacilli had been found. All these patients had enlarged and infected tonsils and adenoids, generally they had marked dental caries, and some had infection of the antra of Highmore. With attention to the local seats of sepsis the chest condition usually cleared up. These cases showed the importance of every tuberculosis clinic being in a position to consult with a laryngologist and otologist. The relationship of gastric ulcer to nasal and oral sepsis also required more team-work between the surgeon, physician, laryngologist, and dental surgeon than had been usual. He had done a considerable amount of general surgery, and had constantly noticed that oral sepsis was associated with such conditions as gastric ulcer and carcinoma. Probably there was in the stomach an early stage, before an ulcer formed, at which the aid of the laryngologist might well be all-important.

The Medical Point of View.

Dr. R. A. YOUNG began by paying a warm tribute to the pioneer work of Dr. William Hunter on dental and oral sepsis. It was difficult, he said, to find a satisfying definition of sepsis, but, for the purposes of this discussion, it could be taken to mean the conditions produced by local infections with pyogenic organisms. Hence the chief conditions to be discussed were those of streptococcal origin, and in these infections bony structures were very apt to be involved. There were at least six ways in which local sepsis of mouth, nose, and pharynx might affect the respiratory mechanism: (1) By direct spread along the mucous or submucous tissues. (2) Mechanically, by the nasal obstruction preventing the filtering and warming functions of the nose, and thus leading to catarrh of air passages and alveoli. (3) By the inhalation of septic organisms derived from the nose or mouth, leading to infective conditions of the bronchi or lungs, or by particulate inhalation, especially when there was widespread ulcerative disease, or when the patient was unconscious, as during anæsthesia. For all operations there should be the strictest hygiene of the mouth. (4) Indirectly, by toxic absorption influencing the blood and immunity of the patient, such an influence being apparent wherever there was long-continued sepsis. Sometimes there were also indications of endocrine exhaustion, as shown by lowered blood pressure and appearances of mild hypothyroidism in patients with advanced oral sepsis. (5) By septicæmia or infective endocarditis originating from oro-nasal sepsis. Lastly, there might be (6) a painful fibrositis of the muscles of the thoracic cage, leading to pleurodynia. Dr. Young concluded by considering the chief clinical results of these processes, including laryngitis, bronchiectasis, pneumonia, gangrene of lung, and tuberculosis, and said that if the discussion impressed on those concerned with treating respiratory diseases the necessity for attending to abnormal conditions of the mouth and nose, it would have served a useful purpose.

Dr. IZOD BENNETT said that conclusive proof of the dependence of gastro-intestinal disease on sepsis higher in the alimentary canal was not yet forthcoming. Much of the evidence now available, however, pointed so clearly in one direction that even now some dogmatism was justified. There were two paths by which bacteria or their toxins could affect the stomach and lower intestinal tract: (1) by the swallowing of bacteria and pus, and (2) by direct passage into the blood stream of pathogenic organisms arising in the teeth, tonsils, naso-pharynx, or sinuses, with consequent appearance of embolic phenomena in other parts. He did not regard the swallowing of bacteria and pus from the teeth, nose, and mouth as so frequent a cause of gastric and intestinal disease as was formerly supposed. It must be remembered that many organisms were habitually ingested with food. Danger seemed specially to be present when the swallowing of pus was coincident with achylia. With regard to the second path of pus, many thought that infection via the blood stream was the commonest cause of gastric and duodenal ulcer. In 1922 Dr. Newton Pitt had shown that despite surgical and medical advances, the number of fatal cases of peritonitis following perforation of gastric and duodenal ulcer rose from nil in the five years, 1880–84, to 111 in 1915–19. Was this related to an increasing prevalence of sepsis in the mouth and throat? He believed that in all sections of society it was an everyday occurrence for dental surgeons to take measures for the preservation of teeth, whose pulp was infected, instead of extracting them, as was the former practice. Could such teeth be regarded as subsequently free from all sepsis? He considered that the filling of devitalised and artificially anæsthetised teeth was contrary to the accepted principles of the surgery of bone disease. The practice might bear a relationship to the increase of gastric and duodenal ulcer, cholecystitis, and appendicitis.

The Dentist's Point of View.

Mr. J. G. TURNER said that the evil influence of naso-oral sepsis was beyond doubt. He quoted four striking cases of gastric and intestinal trouble of marked degree which were cured by removal of all offending teeth. The smell of most mouths was due to stagnating material, chiefly food made from finely-ground flour, among the teeth, which had been made putrid by bacteria. Sticky food would only lodge where a resting-place had been provided or prepared for it. He agreed with Dr. Bennett's suggestion that ill-executed dental work and over-conservatism in respect of dead teeth were responsible for a large amount of illness. Pus and putrid material might inhibit the secretion of gastric juice. Some patients vomited septic material which had remained unaltered during its residence in the stomach. Could a man, he asked, immunise himself against his own dental sepsis? In the mouth the clinical answer was in the negative.

Mr. A. BULLEID said it was difficult to be certain that the bacteriological findings in cultures revealed the causal organisms of the disease under investigation, because the organisms isolated did not differ markedly from those in the healthy mouth. Agglutination was the most satisfactory of serological reactions. Infections of the nares and naso-pharynx were more easily investigated, as in health the secretions were normally sterile. All chronic pulmonary infection was benefited by eradication of naso-oral sepsis. Bacteriological examination of the sputum and of material from naso-oral foci should always be carried out when such infection was present, as prophylactic vaccination subsequent to the medical treatment of the lung condition was of great importance. He discussed the significance of the *Leptothrix buccalis* group of organisms in relation to the formation of tartar on the teeth.

Discussion.

Dr. F. A. PICKWORTH (Birmingham) sent a contribution, which was presented by Mr. Davis. It related a case of diplococcal infection of the sphenoidal sinus, with associated hæmorrhages in the stomach. The patient was a man, aged 62, who was

insane, and had a five years' history of epilepsy. The Wassermann reaction was negative. The bony walls of the sphenoidal sinus were remarkably thick, and the membranes of the sinus on both sides showed hypertrophy. The gastric mucosa showed regular surface hæmorrhages. Microscopically the sinus epithelium was invaded by numerous cocci. Even in the gastric epithelium there were cocci of similar character to those in the sphenoidal sinus. In addition the organisms were found in the pituitary capsule and gland.

Dr. P. WATSON-WILLIAMS (Bristol) spoke of the value of the work being carried on at Birmingham University by Dr. T. C. Graves and Dr. Pickworth, especially in the subject under discussion. In 1921 he, Dr. Watson-Williams, published a paper calling attention to the frequency of appendicitis owning, apparently, nasal sepsis as its cause. These were cases of great chronicity, and it was chiefly in latent cases, in which but little pus was evident, that systemic manifestations were found; they were apt to be overlooked unless carefully searched for. He quoted a number of typical cases. He pointed out that the greatly increased frequency of gastric, duodenal, and appendicular troubles since 1889 synchronised with the epidemicity of influenza.

Dr. E. STOLKIND said that even when the teeth had been removed it did not always follow that the secondary disease cleared up. Among many patients with digestive and pulmonary disease, very few reported improvement after extraction of their teeth, and he considered that the close relationship between disease of teeth and lungs and gastro-intestinal tract had not yet been proved.

Sir JAMES DUNDAS-GRANT spoke of the frequency with which it was found that cases with pulmonary tuberculosis at Brompton Hospital improved unexpectedly when the nose was washed out with a prescribed lotion. Sometimes suppurative disease of the naso-pharynx produced a form of laryngitis very difficult to distinguish from tuberculosis. He had seen the vocal cords coated with a greenish crust of pus which had obviously found its way there from an infected sinus. Washing out of the nose greatly improved the throat condition. He felt sure that occasionally bronchiectasis was caused by sinusitis.

Dr. T. A. CLARKE said he felt convinced that oral and nasal sepsis was a frequent cause of spasmodic dysphagia. In nearly all the 200 cases of carcinoma of the œsophagus which he had investigated dental sepsis was present, in many advanced. Even in these cases attention to the sepsis temporarily improved the swallowing.

Mr. A. F. MACCALLAN spoke of ocular indications that general resistance of the body was giving way because of the action of chronic sepsis, chiefly in teeth, tonsils, or colon. Since last May he had seen 74 in which indications of this kind were present. Although 90 per cent. of them had 6/6 vision, there were conditions such as blepharitis, and the slit-lamp revealed slight opacities in the periphery of the lens and in the vitreous, seen when the pupil was dilated, and also hyperæmia of the macula. He advocated a more frequent ophthalmic examination of patients to ascertain their resistance and how far the disease had progressed.

Dr. W. HILL did not think that pulmonary, gastric, and intestinal disease often resulted from focal disease in the nose, though he granted that a relationship had sometimes been clearly established in frankly suppurative cases. Fœtor of itself was not necessarily an indication of the presence of pathogenic micro-organisms.

Mr. CYRIL HORSFORD declared that in his own experience there were a large number of cases of gastro-intestinal disease which were directly due to infection of the nose and throat. Treatment of infections of antra or sinuses sometimes cleared up the gastric condition when the usual treatment proved unavailing.

RECEPTION AT THE ROYAL SOCIETY OF MEDICINE.

SAINTS, MEDICINE, AND SURGERY.

A LARGE company of Fellows and guests attended the reception at the Royal Society of Medicine on Jan. 16th, when Dr. JANE WALKER delivered an address on medical saints. It had been a real difficulty, she said, to choose a title which would exclude those very many medical men and women who had been so full of grace and holiness as to merit the term "saint." She proposed to limit herself to those Christian Saints who had been concerned in the medical and surgical details of the profession of healing and, indeed, to the best known and most important among them, for their total number was very great. Of some, for instance St. Conrad, patron of sufferers from hernia and rupture, she had been unable to find any pictures. Saints, she pointed out, were represented by the old masters as patrons of individuals or of cities, but as time went on there was a tendency for the donor of the painting to increase in size and sanctity at the expense of the saint. In the van der Goes "St. Victor," shown at the Glasgow Gallery, the donor was quite as large as the saint and dressed in monkish garb. A good example of a saint as patron of a city was found in the Mantegna St. George, patron saint of Venice, as well as of England. Saints were also depicted, however, in their rôle of protectors against, and supporters of sufferers from, disease. Of these the first was St. Luke. Modern criticism tended to deny to the third evangelist any medical status, but Dr. Walker pointed out that it was very like a doctor to omit, in describing the incident of the woman who had had an issue of blood, the remark, supplied by Matthew and Mark, that she had spent all her living on physicians and was no better but rather worse. It has been suggested that St. Thomas, who was an honest sceptic, though a reverent one, would be a better patron saint for doctors than St. Luke. In Dr. Walker's opinion the third gospel showed many signs of medical knowledge, for instance, the reference to Peter's wife's mother when she was holden with a "great fever," a recognised diagnosis in those days. St. Luke was the patron saint of artists, and himself a painter. It was while sitting to him for a portrait that the Virgin was supposed to have told him all those intimate details of the early life of her Son which are found in no other narrative. A picture by Dieric Bouts, on view at the Academy last year, showed St. Luke painting this portrait. Next in importance to St. Luke was St. Pantaleone. He was said to have been very beautiful and of graceful manners, and a high favourite with the emperor. He had been tied to an olive tree and beheaded, and an olive had sprung up where the head fell, so that he was generally represented wearing the long robes of a physician and holding an olive branch. St. Cosmas and St. Damian would be the subject of another lecture to the society later on, but Dr. Walker could not resist showing the picture representing St. Damian's one lapse from grace in the matter of fees. An importunate widow presses on him a money-bag which he sternly rejects with the right hand whilst receiving it into his left. "Characteristic attitude of a physician refusing a fee" observed the lecturer as the reproduction was thrown on the screen. St. Cosmas had been so incensed with his twin for this sin that he had declared that they should not be buried in the same grave. The story ran, however, that when the second grave was being prepared, a camel had arrived, with tears streaming from its eyes, and announced that it represented all the animals who had been healed by these good men. It had begged that they should not be separated in death. In showing the well-known picture of the graft of a dead Moor's leg on to the amputation stump of a man with a cancer of the shin, Dr. Walker drew attention to the scars of the cautery on the head of an onlooker, to the "septic dog" in the foreground, and to the stupefied expression of the patient. Narcotics were seldom

mentioned, she said, because they were so very common in those days.

Three Virgin Martyrs.

St. Margaret was the patron saint of pregnancy because she had come out of the mouth of the dragon, from all time an emblem of danger. She was often represented with the dragon at her feet, still clasping in his jaws a portion of her robe. A beautiful van Eyck in the National Gallery represented a husband presenting his wife to his family. That she was intended to be pregnant and that her pose was not merely the fashionable one of the time was proved by the presence of the little statue of St. Margaret on the bedpost. An interesting painting was the "Nativity" of Petrus Christus, where St. Joseph was shown with a candle ushering in a midwife—too late to do aught but adore. This feature, Dr. Walker believed, never appeared in southern works of art. St. Catherine, of Alexandria, had been a great orator and was patron saint of the tongue and of learning. She was represented, teaching, in a picture by Goosen van der Weyden, and, since she had been a princess, she was always shown wearing a crown. Her father had considered her too wonderful for any human mate, and hence had arisen the legend of the mystic marriage, represented by many painters, for instance Bernadino Luigi. She had been tortured on four wheels revolving in different directions, but the wheels had been miraculously smashed and she had therefore been beheaded. Her body had been carried by angels to Mount Sinai. St. Barbara was the patron saint of sufferers from accidents and explosions. Her father, also, had considered her too beautiful for mortal eyes to look upon and had therefore imprisoned her in a tall tower, which became her emblem. She had asked for three windows instead of the two he had planned, remarking that light came to the soul through three windows. He had thence concluded that she must be a Christian and had attended to her tortures himself, finally cutting off her head. Among the painters of Barbara and her tower had been van Eyck and Holbein.

Plague and Pestilence.

St. Sebastian, born in Gaul in 288, had been a member of the Pretorian Guard and a favourite of the emperor, who had vainly urged him to deny his faith. The arrows were always shown sticking into non-vital spots, and he had, in fact, recovered from them to die from beating with clubs. Occasionally a picture mistakenly showed an arrow in a vital spot, as did the one in the Uffizi Galleries, Florence. The arrow had been the emblem of plague from olden time, as suggested by the text "the arrow that flieth by noonday." St. Roc, born in Montpellier with a small red cross on his breast, had made a pilgrimage to Rome in the course of which he had encountered plague and discovered his success in treating the sufferers. He earnestly hoped, said Dr. Walker, that he would get the disease himself, and in the end succeeded in acquiring the ulcer of the leg which his many portraits represent. The pain was so great that he cried out, and was turned out of the city and would have died in the forest had not his little dog daily fetched him a loaf. When he returned to his native city he was so thin and worn that nobody recognised him, and he was put to death as a spy. He left a document, however, revealing his identity and his significance for plague-stricken communities. Venice, being much subject to plague, decided that she could best do with his body, and therefore stole it and founded the well-known church and convent.

The Eye, Breast, Teeth, Stomach, Throat, and Lungs.

There were confused and obscure stories about St. Lucy, patron of the eyes and of the labouring poor. The later ones said that her lover had inordinately admired her eyes, and that therefore she had plucked them out and sent them to him. He had immediately become a Christian and her sight had been miraculously restored. In the end she had died through having her neck pierced by a sword. She was frequently represented with two eyes on a sort of skewer in her hand, as in the Bergamo in Rome. St. Agatha had been cast into a house of ill-fame, but as she had refused to live a life of infamy her breasts had been cut off. Painters varied in the amount they left to the imagination, but she generally bore her breasts on a plate in her hand. St. Apollonia had been commanded to worship a statue, but had instead exorcised the devil from it, so that the statue had fallen to pieces. The governor, enraged, had had all her teeth pulled out, one by one, and later she had been burned to death. Patron of sufferers from stomach-ache and allied disorders, St. Erasmus had been tortured by having his entrails wound off on a sort of winch. He was usually depicted with his bishop's mitre and a kind of spindle in his hand, representing his intestines. St. Blaise, patron of diseases of the throat and of woolcombers and wild animals, had been a Greek bishop in the time of Diocletian and had cured a child who was being choked by a fish-bone. He had been scraped to death with large iron combs, very like the implements of the modern woolcomber. St. Ansano had been baptised at the age of 12 and had escaped from the persecution of Diocletian to Siena, where, however, the proconsul had seized him and, having failed to burn him, had cut off his head. Pictures showed him holding his lungs and liver in his hands, and he had become, for no known reason, patron of consumptives. St. Catherine of Siena, born in 1380, had desired the religious life from her infancy, but her father had only given his consent after finding her praying with a dove on her head. She had tended the sick, but had died at an early age and cramped her usefulness by excessive privation. She had been a woman of great strength of mind and body, and had been responsible for sending the Pope back to Rome from Avignon. She was portrayed wearing the habit of the Dominicans and holding a lily.

The vote of thanks to Dr. Walker, proposed by Dr. Percy Smith, included also the Wellcome Historical Medical Museum and Miss Marie Leon, who had lent many of the exhibits which were thrown on the screen and put on view in the library.

SOCIETY OF BRITISH NEUROLOGICAL SURGEONS.

THE third meeting of this Society was held in London in December last. Sir Charles Ballance, retiring from the Presidency, was made Hon. President, and Mr. Wilfred Trotter was elected President. It was announced that Dr. W. W. Keen (Philadelphia) had been made an Emeritus Member and Prof. Harvey Cushing (Boston) and Dr. C. H. Frazier (Philadelphia) Honorary Members.

Mr. H. S. Souttar operated at the London Hospital, using his craniotome, and cut a large frontal flap under local anæsthesia in an exploration for a para-sagittal cerebral tumour. He afterwards demonstrated cases and apparatus. The later proceedings took place at the Institute of Anatomy, University College. Prof. Elliot Smith reviewed some of the commonly neglected points in intracranial anatomy of interest to the neurological surgeon, referring to the work of Dr. Harris on the development of the diploe, to the course of the abducens nerve, and to his own work on the visual area and the relations of the carotid arteries to the optic chiasma. Papers were then read by Mr. L. R. Broster on a Case of Suprarenal Virility with Operative Findings, by Mr. H. W. B. Cairns on the Effect of Trauma in Disclosing New Clinical Signs in Neurological Cases, and by Mr. Julian Taylor on the Nature of Bone Invasion and Proliferation in Cases of Meningeal Tumour. A discussion on the Surgery of Head Injuries followed. It brought to light a very general conservatism with respect to early operation except in cases where a localised hæmorrhage could be diagnosed, and (of course) in cases of penetrating wounds.

The following morning was devoted to the display of patients by London members, and to a demonstration by Dr. H. A. Harris, of preparations in the Museum of the Institute of Anatomy, University College.

HUNTERIAN SOCIETY.

ON Monday last, Jan. 16th, this Society met in the Mansion House, with Mr. A. MORTIMER WOOLF, the President, in the chair, to hear Dr. HOWARD KELLY, of Baltimore, deliver the Hunterian oration for the year. Dr. Howard Kelly reviewed in his paper the whole history of surgery, taking as his text the Hippocratic maxim τριβὴ μετὰ λόγου, which he wittily translated

"GRUBBING WITH REASONING."

These three words had been, he said, the guiding principle of surgery and her sister medicine all through the ages. In the pursuance of this ideal surgery had grown apace; in its neglect she had lost her vision and become for a time dishonoured. He was indebted to Sir Clifford Allbutt, who, quoting these three master-words in 1904, had completely transformed his outlook on the history of surgery. Whereas he had been used to view the development of surgery as a slow, blind, evolutionary accretion, governed only by the one critical standard of a knowledge of anatomy, he now saw its history perfused with a new light and an abiding interest, and the whole of its past ruled by one glorious principle. This great maxim, "rubbing with reasoning," had been indispensable to progress of all kinds throughout all the ages. Τριβή was the rub and wear of daily contact with facts; "grubbing" expressed its essential meaning even better than "rubbing." Λόγος was the idea, man's supreme gift of cogent reason. Τριβή was the phenomenon, λόγος the noumenon ever shimmering behind the phenomenon in all Nature. When τριβή ruled λόγος, the light went out and men groped in the darkness of materialism; did λόγος lord it over τριβή, superstition and vagaries entered, bringing disorganisation. When, however, the two were wedded by the conjunctive μετά, their progeny was true science. This trilogy had been imparted to mankind by our remotest ancestor, to govern surgeons in all their ways at the birth of their craft. Applied to the history of the 70 generations from Hippocrates to Hunter it became a talisman revealing progress and uncovering the ways of error.

The Adolescence of Surgery.

The stream of medical knowledge had its source in a man who was perhaps the greatest physician of all past time, and who established medicine on a broad scientific basis with high ethical ideals.

Hippocrates' treatise on fractures and dislocations, joints, and chronic ailments was comparable with recent work, and his care of the wound left little to be desired before the era of Lister. He anticipated healing by first intention in fresh wounds, boiled the water used for washing, and ordered the cleanliness of the operator's hands and nails. Treatment had at first been largely hygienic and empirical; the Greeks, as Garrison noted, used not so much to cure as to prognosticate. Modern surgery owed to the Coan sage the example of the open mind, the alert, cultivated use of the faculties, and the habit of utilising experience.

Hippocrates had bequeathed his Aladdin's lamp of personal experience and judgments to be rubbed by generation after generation, but with it he had unfortunately handed down a λόγος, in the shape of the inherited humoral doctrine, which had escaped the discipline of τριβή. Surgery had therefore advanced slowly for the next 500 years, although it had received material aid from the Alexandrian school, whose anatomy had been summarised by Celsus in his "De Re Medicinâ."

The next great landmark was Galen, the speculative philosopher, the peripatetic physician. Galen had resembled John Hunter in the catholicity of his interests, but had left "no good accounts of clinical cases, only miraculous cures" by polypharmacy. He had approved the Hippocratic words of wisdom, but had unfortunately lacked Hippocrates' modesty, and so had lost the talisman and held captive, by his autoschediastic lucubrations, a school of blind Galenists for over a thousand years. His dogmatism had produced a millennium of darkness that could be felt, and his fatal doctrine had been that a cart goes best if the horse is set to pushing it from behind—i.e., that theory should precede and control practice, and that τριβή should be wholly subordinate to λόγος. The mischief he had done was most evident in the treatment accorded to Copernicus, Brahe, Kepler, and Galileo in the sixteenth and seventeenth centuries, and in the astrology, alchemy, and demonology that flourished to the exclusion of surgery, which, relegated to the barbers, became literally barbarous.

Mediæval Struggles.

Towards the end of the twelfth century light had begun to return with a little group of humble men, "reared in base apprenticeships, not only illiterate but forbidden even the means of learning," who by τριβή μετὰ λόγου had zealously sought the truth and proclaimed it, sometimes in the despised vernacular. Roger (1180) had done many things besides suturing intestines over a hollow tube and using ligatures in hæmorrhage. Salicetus (1201–1277) had substituted the knife for the fiendish but widely used Arabian cautery; had divided nerves, and kept good case-histories. Lanfranc, his pupil, had become the titular head of French surgery. Theodore of Lucca (1206–1277) had been a zealous apostle of union by first intention, insisting "It is not necessary that pus should be generated in wounds." Henry de Mondeville (1260–1320) had been a vigorous opponent of tradition and had declared with vehemence that "God did not exhaust his creative power in making Galen." Henry had been "the last champion in his day of two causes: the solidarity of medicine and union by first intention—the second lost for 600 years." Mediæval surgery had ended with Guy de Chauliac (1300–1370) a virile, inquisitive spirit who had cast out the lingering "sorcery, jugglery, astrology, and mysticism," and whose "Chirurgia Magna" was a masterpiece of learned luminous writing. In opposition to Henry and Theodoric, he had held that the surgeon should actively insist that the wound proceed in the approved fashion through its numerous stages, from "coction" to complete cicatrisation.

Ambroise Paré.

Paré's name had stood deservedly pre-eminent in the records of the last 350 years, but the reason for this pre-eminence was not at first sight easy to understand. He had been a barber's apprentice of no scholarship, snubbed by his compeers and writing in the vernacular, but by sheer merit he had cast all his predecessors into the shade and towered above his ridiculous influential contemporaries. The cause lay not in his ligating of arteries, but in his innate greatness and nobility of character. Men had known him but to love, honour, and respect him, and so the indefinable aroma of his reputation, commingled with his great works, was as potent to-day as it had been 400 years ago. An indefatigable worker, he had been fortunate in having a vast war experience. His predecessors had exhumed surgery and set her on her feet; Paré had rehabilitated her and presented her at court and to the world. No surgeon had ever made a more effective conjunctive use of τριβή and λόγος, multiple experiences digested and coördinated by reasoning.

Between Paré and Hunter there had been few surgeon torch-bearers. After Richard Wiseman (1622–1676) there had appeared William Cheselden (1688–1752), and Percival Pott (1714–1788), the former the patron saint of lithotomists and the latter an original genius and writer of masterpieces; these had been John Hunter's teachers and worthy of their great pupil. Although there was a tendency to pass over this pre-Hunterian age as sterile, much had occurred in it that was of first-rate scientific importance. Anatomy had made notable advances during this interval, despite the lack of material (Dr. Howard

Kelly here interposed some entertaining stories of "body-snatchers"), but its three leading events had been Harvey's discovery of the circulation of the blood (1628), the opening-up of histology and physiology by Malphighi (1626–1694), and the foundation of modern pathological anatomy which was laid by Morgagni (1682–1771) in his eightieth year; not to mention Bonet's "Sepulcretum" (1679), a "pathological library" containing all the prime needs of the surgeon.

John Hunter, and After.

Genius, for effective expression, needed a favourable environment, and there had never been an age which teemed so richly with scientific promise as that into which Hunter had been born. Chemistry had been growing under the hands of Scheele, Black, Priestley, Lavoisier, and later Humphry Davy, whose mantle had fallen on Faraday. Geology was being moulded into a veritable science by such men as James Hutton, William Smith, and James Playfair. Hunter's own collection of fossils, bequeathed to Sir Richard Owen, were basic in English geology. In botany, mycology, astronomy, economy, mechanics, art, morals, and religion new life was also stirring. Thus the thrill of birth had been in the air, and surgery, though the Benjamin of the sciences, had proved no laggard.

The twin novæ, William and John Hunter, had been born in 1718 and 1728 respectively, and had each lived 65 years. John had spent his boyhood roaming abroad in the open, undisciplined by his parents and neglecting letters for Nature, which, however, had nursed him and taught him never-to-be-forgotten lore. At 20 he had been undecided whether to be a soldier or a surgeon, but his brother's established reputation had turned the scale. Three years' "grubbing" had made him, with his natural talent, a highly skilled anatomist and a qualified surgeon, and he had then entered upon a period of great fruitfulness—not as a soaring genius but as a true exponent of τριβή, or of his own maxim, "Don't think; try." The regeneration of the ancient art of surgery had dawned in the enthronement of the basic principles of hard work with fruitful hands and clarified vision, observation, and record. What would we not give, asked the speaker, for an ergograph of one of John's days? He had subjected himself to an exemplary and rigorous routine in the exploration of fields some of which were closely allied to surgery and some of which were not, and had pressed his labours to the end of his days, in spite of the Damoclean sword of an agonising and ultimately fatal angina. As well as becoming a great surgeon he had also made himself a master of zoology and geology, and the new art of taxonomy, based as it was on physiology, had interested him greatly.

Dr. Howard Kelly then reviewed the many important contributions of John Hunter to anatomy, pathology, surgery, and the allied sciences. His one deficiency had been that he was no encyclopædist of the work of others; he had failed to realise, like many before and after him, that a wide distribution of knowledge over many workers was likely in the end to accomplish more even than one great mind. The great century had therefore reached a fitting climax in the career of a man who had done more than any other to erect for surgery—that most beneficent of all human activities—the two imperishable pillars upon which, in common with all other science, it rested; the τριβή of skilful painstaking observation and accumulation of data, and the λόγος of highly trained reasoning, analysis, classification, and the coördination and abstraction of laws.

In the time of Hunter, however, surgery as it existed to-day had lain profoundly concealed in the womb of the future. In the absence of a new and transforming impulse an acme had probably been reached similar to that proclaimed by Michaelis, of Kiel, when, last century, he had performed on Frau Adametz her fourth Cæsarean section. That impulse, however, had been given, first by the pioneers of anæsthesia and cellular pathology, and most decisively of all by the hero who, working on the basic principles of John Hunter, had converted the reeking hospitals of his time into temples of health, sweetness, comfort, and happy associations; who had, in spite of opposition, ridicule, and obloquy, brought down heaven's greatest physical blessing and destroyed our direst enemies, the germs of wound infection. Such a man deserved, even more than the speaker's great countryman, Franklin, the encomium "Fulmen que eripuit cœlo, sceptrumque tyrannis." "Gentlemen," concluded Dr. Howard Kelly, "let us ever hold in highest honour the names of John Hunter and Joseph Lister."

In replying to a vote of thanks proposed by Mr. T. H. OPENSHAW and seconded by Dr. H. A. ELLIS, Dr. HOWARD KELLY presented to the Society an autograph letter of John Hunter for addition to their collection.

Reviews and Notices of Books.

EMERGENCIES OF A GENERAL PRACTICE.

Second edition. By the late NATHAN CLARK MORSE, A.B., M.D., F.A.C.S. Revised and rewritten by AMOS WATSON COLCORD, M.D., Surgeon, Carnegie Steel Co.; Surgeon, Pennsylvania Railroad System. London: Henry Kimpton. 1927. Pp. 514. 42*s*.

THIS book is prepared with a view to assisting those general practitioners who are not in a position to send cases to a specialist, to deal with their emergencies as specialists would; it should make a special appeal to the doctor resident in rural communities and small towns or in the colonies. Originally written by Dr. Morse, it has been revised for its second edition by Dr. Colcord, who pays a glowing tribute to the original author.

After a short chapter on instruments and solutions required in surgical emergencies, there follows a useful chapter on the removal of foreign bodies from all parts of the body where they may lodge; the value of this section as a quick and handy source of reference need not be elaborated. A chapter on first-aid suggests requisites in first-aid boxes, and deals with the subject from the points of view of laymen, nurses, and physicians. Treatment of the drowning is fully described. An excellent section on carbon monoxide poisoning follows, in which it is laid down that CO is not a cell-poison but kills merely by deprivation of oxygen—a most important factor underlying the treatment. This section is particularly well illustrated.

Two chapters on surgical emergencies deal with Carrel-Dakin methods of wound-treatment, Dr. A. B. Kanavel's methods of treatment of infected hands and fingers, abdominal emergencies (described at some length), scalp wounds, and injuries to the eyes. Why icterus is included among surgical emergencies is not clear, especially as the operation of cholecystoduodenostomy is not mentioned.

The discussion of certain medical emergencies is less satisfactorily dealt with; the treatment of hæmoptysis is too dogmatic, being based neither upon physiological nor statistical considerations; powdered alum, for instance, is recommended, and the nitrites are described as useless without further ado. Hæmatemesis is described as "frequently following severe injuries over the epigastrium"; most of the remedies suggested are given by the mouth, the advisability of keeping the stomach completely empty not being mentioned. The use of insulin in diabetic coma is discussed in five lines. There follows more useful sections on food-poisoning, burns, rabies, tetanus, and retention of urine.

Fractures receive 100 pages jointly with dislocations; this section is well illustrated; the methods recommended are evidently those of which the author has experience, and are mostly orthodox ones. A chapter on emergency amputations follows. The section on obstetric emergencies includes Cæsarean section, the use of forceps, and placenta prævia. In

each of these conditions the author gives us the principles which have guided him in a busy practice. Finally a 70-page section on poisoning from all kinds of sources completes the book; it includes many poisons not found in more compact handbooks, and should be useful for reference.

The book will not fail to interest those medical men who have to tackle their own emergencies. It represents the accumulated experience of at least two busy and varied lives, and contains many a useful hint that does not appear in more academic works.

ENZYMES.

Lehrbuch der Enzyme. Chemie, Physikalische Chemie und Biologie. By Prof. CARL OPPENHEIMER, Dr. phil. et med., in Berlin. Leipzig: Georg Thieme. 1927. Pp. 660.

THIS work aims at covering the whole ground of enzyme action from the point of view of a summary. The book, which is divided into two parts, starts with an account of the chemistry of enzyme action followed by an interesting chapter on the chemical nature of enzymes. An excellent summary of the recent work of Prof. Rich. Willstätter (Munich) is included, and might with advantage be expanded in a subsequent edition. The third chapter deals with factors influencing enzyme action in general. On p. 51 a useful table gives the optimum pH for the action of a very wide series of enzymes, the authority being quoted in each case. The action of neutral salts, various ions, and organic substances is discussed, and the antigenic properties of enzymes are also considered. The next chapter is devoted to the purely physical, chemical, and kinetic aspects of enzyme action, and is written in conjunction with Dr. Richard Kuhn. One of the most interesting parts of this section is the description of the methods of determining the isoelectric point of the various enzymes, which is omitted in most books. The section concludes with a brief account of the absorption phenomena in relation to enzymes. The final chapter of the first half of the book is concerned with the distribution and preparation of enzymes. This is dealt with in a general manner and includes an interesting section on the probable method of secretion of these bodies.

The second part of the book is divided into 16 chapters consisting of a summary of all the recent work upon special enzymes. Each chapter is devoted either to one enzyme, or to a group of similar enzymes. The summaries have been admirably made, few researches of any note having been omitted, and probably for this reason very few references are to be found, but a full bibliography would have been invaluable, and we hope it may be supplied in a future edition.

CONTROL OF ANOPHELES.

Mosquito Surveys: A Handbook for Anti-Malarial and Anti-Mosquito Workers. By MALCOLM E. MACGREGOR, Entomologist, Wellcome Field Laboratory, Wisley. London: Wellcome Bureau of Scientific Research. 1927. Pp. 282. 15*s.*

A Short Illustrated Guide to the Anophelines of Tropical and South Africa. By ALWEN M. EVANS, M.Sc., Lecturer in Entomology, Liverpool School of Tropical Medicine. University Press of Liverpool, Ltd. 1927. Pp. 54. With 12 plates. 9*s.* 6*d.*

MALARIA is unlike the majority of diseases, in that its epidemiology and control differ greatly in different parts of the globe. This is mainly due to the fact that there are some 30 species of *Anopheles* suspected of being carriers in one country or another; each of these has its peculiar seasons, breeding places, and habits. It follows that the control of the vector and the disease depend on knowledge of local conditions and on methods which may not be generally applicable.

Mr. MacGregor has written an account of the mosquitoes of Mauritius and Rodriguez, and has used it as the foundation of a general account of anti-mosquito measures. The result is not very successful. These islands are oceanic, with a small and specialised fauna. Much space is devoted to forest species, which breed in rot holes, and have no relation to human beings. The purpose of the book is to provide information useful to field workers who have to study the control of *Anopheles* and other mosquitoes. The more general parts of the text are clear and elementary, but parts of the book are extremely specialised, and would only be appreciated by a competent medical entomologist; we refer to some of the details relating to the anatomy of Culicine larvæ, and in particular to the reprinted Key to the Culicine Genera of the World, by Edwards. The best points of Mr. MacGregor's book are the practical notes on breeding and laboratory technique, a matter on which the author is a master, and the account of the common domestic Culicines, *Culex fatigans* and *Aëdes argenteus*, which receive insufficient treatment in most works.

Miss Evans in her description of the species of *Anopheles* found in Africa south of the Sahara gathers together the results of much previous work, done from the Liverpool School of Tropical Medicine and elsewhere. Her book will be found valuable to many field workers, whose duty it is to discover which species of *Anopheles* is harmful, where that species breeds, and how best it may be controlled. The entomological aspects of malarial control in Africa are complex, because there are more than 30 species of *Anopheles* in the continent, and because it is not yet known whether some of them are vectors of malaria or not. Miss Evans's book is admirably illustrated with line drawings and half-tones, executed by the author, and with photographs of breeding places of some of the more important species. Its value to those living out of Europe would have been increased had the work of earlier writers been abstracted more fully.

X RAY AND RADIUM IN THE TREATMENT OF DISEASES OF THE SKIN.

Second edition. By GEORGE M. MACKEE, M.D. Professor of Dermatology, New York Post-Graduate Medical School. London: Henry Kimpton. 1927. Pp. 788. 45*s.*

THE keynote to this excellent work is repeatedly emphasised in the preface—X rays and radium must be used or directed by a man who is not only a dermatologist, but also a radiologist. The author holds that "too many physicians use X ray and radium with no more knowledge of these agents than that possessed by a technician," and protests that "without a training in radiology the dermatologist cannot be resourceful in diagnosis, therapy, or research nor can he use X rays and radium intelligently." These agents are not a panacea that can be used ignorantly and indiscriminately, and there is little doubt that the unskilful application of radiations has frequently brought the methods employed into disrepute. Dr. Mackee has planned his book on broad lines and has included in it the ground work of physics essential to the intelligent application of radiations. He is a clinician by profession and a research scholar by nature. He shows constantly that he is discontented with empirical dicta and would like to turn to laboratory experiments to investigate further the unexplained results obtained by himself and others.

The chapters dealing with protection and allied subjects are full of practical wisdom. A specially interesting chapter is that on idiosyncrasy, a subject of great importance, not only in therapeutic, but also in diagnostic work. Much information gathered from the foremost American radiologists has been compressed into this short chapter, and the author states that "the use of the term idiosyncrasy has decreased in about direct proportion to the improvement in technique and increase in therapeutic biological knowledge."

In 43 concise and orderly chapters the author discusses his own views with full regard to those held by workers who differ from him. He has succeeded in compiling a book which is not only readable but valuable to dermatologists and to all who study radiology.

INTERNAL MEDICINE.

Lehrbuch der Speziellen Pathologie und Therapie der inneren Krankheiten. By Prof. Dr. A. STRÜMPELL. Twenty-sixth edition. Revised by Prof. Dr. C. SEYFARTH, Assistant to the Medical Clinic of the University of Leipzig. Leipzig: F. C. W. Vogel. 1927. Vol. I., pp. 872; Vol. II., pp. 982. M.58 for the two vols.

A GENERATION of medical students and practitioners has been brought up on Strümpell's text-book of general medicine since it first saw the light in 1883, and now, three years after the original writer's death, the book has been brought fully up to date by Prof. Seyfarth. The first volume, which appeared in 1926, dealt with the acute infections, respiratory, circulatory, and alimentary disorders. The second volume now before us deals with diseases of the urinary and locomotor systems, of the blood, and endocrine glands, with disorders of metabolism, and concludes with a section of 500 pages on the nervous system. Three appendixes take in poisonings, prescriptions, and spas respectively. Illustrations are abundant and good although the scarcity of skiagrams is rather striking; the few that are given are printed on special plates with good effect. Treatment by physical methods receives less attention than it deserves and diathermy appears nowhere to be mentioned. But these are small drawbacks which can be rectified on the next revision, and the book remains one of the best manuals of special pathology and therapy in any language.

DISEASES OF CHILDREN.

Aids to the Diagnosis and Treatment of Diseases in Children. Sixth edition. By the late JOHN MCCAW, M.D. Revised by F. M. B. ALLEN, M.D., M.R.C.P. London: Baillière, Tindall and Cox. 1927. Pp. 330. 4*s.* 6*d.*

THE revision of this unit of the "Aids" series, written by the late Dr. McCaw, has been carried out by Dr. Frederick Allen. He has met with complete success in his attempt to keep the volume up to date, and from such important examination standpoints as ætiology, classification, and symptomatology, it should provide the student with the greater part of his necessary equipment. Dr. Allen states in the preface that he has endeavoured to increase the utility of the book by reducing the space allotted to treatment. He has done this rather too drastically, barely enough provision being made in this branch of pediatrics for examination requirements. For instance, the process of simplification has left the section on infant feeding without any definite scheme for modification of milk, the reader being referred to other text-books. With this possible exception the subject is very adequately covered, and, if used for the purpose for which it is best suited—namely, revision—this volume of the series should continue to be of great assistance to those preparing for qualifying examinations.

NUTRITION.

Feeding and the Nutritional Disorders in Infancy and Childhood. By JULIUS H. HESS, M.D., Professor of Pediatrics, Illinois University. Philadelphia: F. A. Davis Company. 1927. Pp. 566.

THIS well-known work of Prof. Hess's has been for some years representative of the most thorough-going attempts to apply the results of biochemical research to the everyday practice of pediatrics, and has made a strong appeal to those who prefer to approach the subject from the angle of pure physiology. In the new edition the author's method has scored further successes, for not only has the process of correlating theoretical considerations with practical therapy been extended in many directions, but a degree of simplification has been achieved which cannot fail to increase its popularity. In the chapter on artificial feeding Prof. Hess propounds a system in which an absolute relationship is maintained between the quantities of the food elements and the requirements of the infant per pound and kilogramme. He applies this system to the method of feeding by simple dilutions of cow's milk with added carbohydrate, and presents a scheme which is easy to apply, and free from the complicated formulæ which have rendered percentage and calorie feeding distasteful to many practitioners. One and a half ounces of milk per pound of body-weight is taken as the minimum requirement of a normal infant; a minimum addition of one-tenth of an ounce of carbohydrate per pound is made, and is supplied in the form of cane sugar up to a maximum of 1½ oz. in the day. If the carbohydrate requirement exceeds this amount it is met by the use of cereals. No fat is added to the mixture. A new chapter on cœliac disease contains a review of recent work on the ætiology and treatment, and embodies the late Prof. T. Howland's method of dieting with protein-milk as a basis. Minor additions have been made to the accounts of rickets, athrepsia, acidosis, and other disorders which involve dietetic factors.

A TEXT-BOOK OF THERAPEUTICS.

Including the Essentials of Pharmacology and Materia Medica. Seventh edition. By A. A. STEVENS, A.M., M.D., Professor of Applied Therapeutics in the University of Pennsylvania. London and Philadelphia: W. B. Saunders Company. 1927. Pp. 758. 30*s.*

THE last decennial revision of the United States Pharmacopœia having become effective in January, 1926, the appearance of the seventh edition of this work is of some special importance in America. The book consists of two parts, the first being a description of all kinds of remedial measures, the most important of which is the long and well-tabulated section on drugs which occupies 500 pages. This section also contains references to such other forms of therapy as massage, electricity, blood transfusion, spinal puncture, and heliotherapy. The second part is a very comprehensive index of treatment.

The drugs are arranged in the usual order—that is to say, their physiological action determines their place, as in other well-known text-books such as that of Sir William Hale-White. In this edition many drugs find a place for the first time. Barium chloride in heart-block, ephedrine in asthma and hay fever, butyn in local anæsthesia, sulpharsphenamine in syphilis, and two other organic compounds containing arsenic, tryparsamide and stovarsol, are among these. The methods of administering thyroid gland are excellently described; the fresh gland is hardly mentioned, the dried extract and thyroxin in carefully adjusted doses being preferred. Insulin is fully discussed; its possible use in cases of non-diabetic acidosis is mentioned, for example, in eclampsia, post-operative acidosis, and cyclic vomiting. Insulin shock is described. Subcutaneous or intramuscular injection of Collip's extract of parathyroid is recommended in acute or chronic tetany, oral doses having been found ineffective; in other conditions—e.g., in eclampsia and paralysis agitans—the extract is useless. Potassium bismuth tartrate is recommended intramuscularly for tabetic pains and chronic syphilitic meningitis; mercuric oxycyanide as a germicidal solution in dilution of 1 : 1000; novasurol (merbaphen) as a powerful diuretic in œdema due to cardiac and renal disease; hexylresorcinol in certain cases of infection of the urinary tract, and gentian violet, brilliant green, and acriflavine as powerful antiseptics with low toxic properties. The value of scarlet fever and erysipelas antitoxins is judiciously appraised, and there is a good account of non-specific protein therapy. Transfusion of blood and heliotherapy are not dealt with in great detail.

The last part of the book consists of applied therapeutics. Accounts of general and dietetic methods of treatment will be found in their proper places, but treatment by drugs is chiefly stressed. In many sections, such as that on diseases of the respiratory

tract, useful formulæ may be found. The short section on diseases of metabolism deserves special mention, containing not only a useful diet for cases of obesity, but, much more important, a very complete analysis of the value of most foodstuffs. This analysis will help the practitioner to construct a diet in diabetes or to replace in the dietary one constituent by another.

The volume will be useful to the student of pharmacology, to the clincal clerk, and to the practitioner.

TEXT-BOOK OF BACTERIOLOGY.

By WILLIAM W. FORD, M.D., Professor of Bacteriology, School of Hygiene and Public Health, Lecturer on Hygiene, School of Medicine, Johns Hopkins University; Member State Department of Health of Maryland. London and Philadelphia: W. B. Saunders Company, Ltd. 1927. Pp. 1069. 37*s.* 6*d.*

THIS book is described as "an attempt . . . to give complete and accurate descriptions of the micro-organisms commonly encountered in medicine, comparative pathology and hygiene, and public health . . . and is intended primarily for the medical student and the medical bacteriologist." In our view its undoubted value lies not in the account of the common micro-organisms which the medical bacteriologist encounters, but in the description of the rarities which are omitted from the majority of standard text-books and can be found only after laborious search through the literature. Dr. Ford names, for example, 53 species of actinomyces, most of which are certainly not "commonly encountered"; the list may indeed appal the medical student—but perhaps Dr. Ford uses the term student in its broadest sense. It is chiefly the busy trained bacteriologist who will profit by the work, for it gives him the features of many varieties of organisms in a form easy of access. From this point of view the book is most useful. The sections on general bacteriology are somewhat inadequate; notable omissions include the whole question of "rough" variants. The brief account of technique might have been left out of an advanced text-book of this nature, as might also the picture of a microscope; the student capable of tackling 53 actinomycetes is at least acquainted with the external appearance of a microscope.

Systematic bacteriology occupies roughly three-quarters of the book, and the rest is devoted to immunity and infections of doubtful origin. Obviously it has been impossible for the author to verify more than a fraction of the work he quotes, some of the species included having been described on one occasion only, and this point must be remembered by those who use his book for reference. It is undoubtedly a valuable contribution to bacteriological literature. Those who have in the past found Macé's treatise a source of help in time of trouble will find here an up-to-date substitute for that now rather antiquated work.

TO-DAY AND TO-MORROW.

(1) *Galatea or the Future of Darwinism.* By W. RUSSELL BRAIN, M.D. Oxf. London: Kegan Paul, Trench, Trübner and Co.; New York: E. P. Dutton and Co. 1927. Pp. 95. 2*s.* 6*d.*

(2) *Archimedes or the Future of Physics.* By L. L. WHYTE. 1927. Pp. 96. Same price and publishers.

THESE two books are recent additions to the "To-day and To morrow" series which since the date of its commencement and through some 50 little books has provided us with much stimulating material, surveying modern thought in many departments of life, always with courage and often with humour.

(1) In "Galatea" Dr. Russell Brain attacks neo-Darwinian theories with closely packed arguments. He finds biology to be reaping harvests rendered available by new mechanistic methods, but points out that mechanism has been shaken to its foundation by the discovery that time and matter are "not the all-sufficient raw material of the universe but merely products of the mind's attitude towards the four dimensional world of point events"; and he here makes the apt comparison that Darwin is the Newton of biology, which still awaits an Einstein, the philosophic approach to scientific problems being as important as what is held to be the strictly scientific method. In his opening words he presents rather cruelly the course of evolution, according to neo-Darwinism, through a parable, likening mankind to a company of persons leaving London with destinations decided on at random from a time-table, and repeating this process on reaching their first destinations, it being postulated that all who were unfortunate enough to hit upon a second town, which had no station on the particular railway line as the first town, should be executed. It is a fact that this parable illustrates the criticised tenets rather happily, as giving the appearance of an orderly progress where there is no rational mode of locomotion. We recommend Galatea cordially to our readers; no résumé of its contents could be much shorter than the volume itself.

(2) "Archimedes" may well be read in juxtaposition to "Galatea," and the deductions in each may be easier to follow if the reader consults another volume in the series entitled "Gallio," in which J. W. N. Sullivan writes on the tyranny of science. Mr. Whyte's little volume is an appeal to thinkers that they should discard unjustifiable limitations in scientific thought, and should combine to discover what he believes to exist—namely, a single system of natural law which may cover the realms both of matter and life. He suggests in his book the definite line of advance for physics, pointing out that we stand at the eve of a new epoch, when physics, biology, and psychology are converging towards a scientific synthesis of unprecedented importance with results that may elucidate the problem of life—for no less than this is the outcome which he foresees of the latest inquiries into the fundamental electrical processes underlying radiation and chemical combination. As was said in respect of "Galatea," and as we have said in respect to other contributions to this brilliant series, attempts to summarise would be defeated by the author's brevity and compressed form of argument.

JOURNALS.

BRITISH JOURNAL OF CHILDREN'S DISEASES. Vol. XXIV. October–December. — In a paper entitled an Investigation on the Analysis of Human Milk, Dr. Bernard Myers reports on 184 separate analyses carried out at the Children's Clinic, Marylebone-road, of the milk of 84 nursing mothers, whose ages ranged from 16 to 30, the average age being 22. The average analysis showed protein 1·58 per cent., fat 3·85 per cent., lactose 6 per cent., and the caloric value per ounce 18·95. The last third of the milk contained the highest percentage of fat. Although a large number of analyses showed fairly similar results, there was in many instances a distinct variation, especially as regards the fat content and the protein, which within certain moderately wide limits remained normal. The milk of a nursing mother was apt to vary to some extent from day to day, but unless this variation was excessive it did not affect the infant. In conclusion Dr. Myers maintains that for the purpose of an analysis or caloric value calculation the middle third or the whole of the milk in the breast should be used.—In continuation of his paper on Insulin Treatment of Diabetes Mellitus in Children, Dr. K. U. Toverud, of Oslo, discusses the carbohydrate tolerance during insulin treatment as affected by control of the diet, the occurrence of infections, the presence of acidosis, muscular exercise, and increase in weight, and gives an account of the post-mortem examinations. The histories of the 47 cases on which the paper is based are appended, together with some striking photographs of some of the children before and after insulin treatment.

THE LANCET.

LONDON: SATURDAY, JANUARY 21, 1928.

DEATH CERTIFICATION.

IT is a common opinion that the methods of death certification might be improved, and many suggestions to that end have been made by doctors and statisticians, statisticians who are not doctors, and practitioners who, without the implications of mass figures in their minds, none the less desire to record on a State document accurate evidence. In recognition of all this, the Joint Committee on the Nomenclature of Diseases appointed by the Royal College of Physicians of London, in view of the next decennial revision of their report, has directed particular attention to the subject of death certification, and in their meetings a general feeling has been reflected that the young medical man enters into practice without fully appreciating the importance that attaches to accurate death certification. For this there seems one main reason. Of all the duties falling to the lot of the medical man there is none for which so little instruction is provided in his student days, this being apparently due to the fact that the high public significance of the responsibility has been overlooked. Can this be due to a sort of belief that the documents will always be so defective that the returns must be of little value? If this is the case it would seem that two things are overlooked in such an easy mental attitude; first, that every step ought to be taken to help the practitioner to make as accurate a return as possible so that these returns should obtain value; and secondly, that the returns as they at present exist, and with their admitted inaccuracy, are of real public service.

In the figures, as we now have them, there may be many errors, but in so far as these errors are due to carelessness and not to prejudice they cancel each other, so that correlations between disease and mortality emerge whose truth cannot be gainsaid. For example, while the statistics, as supported by death certificates in reference to alcoholism and syphilis, are regarded commonly as particularly untrustworthy, none the less these figures give a valuable picture of what is actually occurring. Employing the form of certification introduced with the International List in 1910 which is valid up to 1920, we find a fall in the alcoholic death-rate proceeding steadily, and even very rapidly in 1918 and 1919, under the influence of war conditions. In 1920 the rate rose, for the population was spending its war bonuses and feeling rich, but even so it reached but a little more than one-third of what it had been in 1910; in fact the war restrictions on the consumption of alcohol reduced this form of mortality by 81 per cent. in the four years, 1914–18, while the reaction of 1920 was reflected by a mortality-rate which attained to only about one-fifth of that before the war. Whatever, therefore, the practical value of the alcoholic death-rate may be as an accurate measure in detail of the extent of this form of mortality, it is of great value as an indication of the effect of a public movement. The accuracy of the alcoholic death-rate, it may be admitted, can be gauged from information obtained from many sources, while that from syphilis and its known sequelæ cannot be checked in this manner. We do, however, know that, while the mortality in association with venereal disease had been falling before the war, it rose rapidly during its progress, so that in 1917, when the control of venereal disease became the subject of State interference, it was at its maximum. To-day the mass figures show that the mortality-rate in syphilis and associated disease has declined from that ominous point, and they can fairly be regarded as an index of progress. If this can be said of returns which in the nature of things would always represent a maximum of unreliability, because of the many reasons for concealment, we may feel sure that under other headings of classification imposed by revised nomenclature the results can be accepted with less question. Indeed, there is no reason to doubt that mortality statistics, however imperfect, already provide preventive medicine with information of the first importance, and as medical training grows more scientific, and as medical knowledge expands in scope as well as improves in definiteness, this importance will grow. But admittedly, then, the task of filling up the actual form, imposed on the practitioner, will become more complex, and this is foreshadowed by the latest form of death certificate, where the practitioner is invited to state first the immediate cause of death and then, proceeding backwards, the morbid conditions which gave rise to this cause. Now the general rule in the office of the Registrar-General is that if several causes of death are mentioned in association on a death certificate a single cause is selected for classification, and at once a difficulty is introduced, in the ascertainment of which is the one that should be recorded. For example, a death may be certified as due to (1) heart failure, (2) myocardial degeneration, and (3) bronchitis; or as (1) bronchitis, and (2) heart disease. If it is a general rule that cardiac affections are selected for tabulation in the Registrar-General's office in preference to pulmonary affections, both these sequences of events will be allocated to heart disease. It was in order to provide a remedy for this state of affairs that the new form of certificate was framed; that is to say, it was designed to secure a definite expression in connexion with the various causes of death, so that the official tabulator might be able to follow the certifier's view of the sequence of events culminating in death. As soon as this view is clearly expressed in a large majority of certificates that reach Somerset House, the Registrar-General will no doubt feel at liberty to discard his own method of selection by rule.

It is certain that the considered views of the Joint Committee will be brought to the attention of the General Medical Council, and, as the educational authority of the medical profession, that body may hold that more assistance in regard to the matter is due to medical students at the latter end of their curriculum. The Council has done useful work for the profession and for the public in its rigid insistence on the accuracy of medical certificates of all sorts. The death certificate, more important from the public point of view than any document which requires a medical sign manual, is admittedly a delicate form to execute, and the considerations that should be before the signatory's mind might well be introduced to him before he is called upon to act professionally.

A YEAR'S EXPERIENCE OF DENTAL BENEFIT.

THE amended scheme for the administration of dental benefit under the National Insurance Acts has been in force for a little over a twelvemonth, and it is now possible to take stock of its working as it affects the dental department of a general hospital. Three categories of insured persons receive dental treatment at the hospitals—namely: (1) patients referred by the honorary medical staff of the hospital; (2) patients referred by practitioners because they require treatment which cannot be given by a private dentist; and (3) emergencies. All other insured persons are referred to outside dentists. The chief difficulty met with in applying the insurance scheme to these three categories is occasioned by the provision that an estimate of the work required should be submitted to the approved society for approval *before* treatment is begun, and by the onus placed on the patient to make a personal application to the society. In categories (1) and (2) it is often a question of extraction of one or more teeth before a course of medical treatment is started or an operation performed; delay in many cases would affect adversely the prescribed treatment. Category (3) must receive immediate attention as a matter of common humanity. The clause allowing treatment to be undertaken up to the value of 10*s.* without previous submission of an estimate does not provide effectively for the situation, as it only allows for the extraction of one tooth under nitrous oxide gas, and the treatment may only be given if the patient has already obtained a dental letter. In the case of the smaller societies whose members are in personal touch with their secretaries, such a letter can generally be had immediately, but where it has to be obtained from a large society through an agent, the delay is often considerable. The submission of estimates, moreover, entails clerical work on the part of the honorary dental staff for which they can ill spare the time, while a lay person can only furnish a statement of the work actually performed. As regards the proviso for personal application by the patient, even where the society allows the hospital to treat first and claim afterwards, it is difficult or impossible to induce patients whose pain has been eased and whose treatment is finished, to sit down and write a letter making a claim the import of which they probably do not understand.

Two of the large approved societies and several smaller ones have now recognised these difficulties and sanctioned schemes which meet the point of view of the hospital. A form is issued to the almoner at her request and the grant is made on her statement of the work done, provided she obtains the patient's signature, about which there is generally no difficulty, as most patients are willing to sign their names to help the hospital. On the other hand, three large societies still adhere to the letter of the law and refuse to make grants for dental treatment without the submission of estimates. At St. Thomas's Hospital we are informed that 91 members of one society, apparently entitled to dental benefit, were treated during the year without any recompense to the hospital. Twenty-two societies have coöperated with the hospital in giving dental treatment and have contributed £52 9*s.* 9*d.* during the year for 63 patients, an average of 16*s.* 8*d.* per patient. The total number of insured persons apparently entitled to benefit was 330, and assuming that 20 per cent. of these, on investigation, should prove not to be so entitled, payment should still have been received for about 264 instead of 63, and taking the average individual payment at 16*s.* 8*d.*, about £220 should have accrued to the hospital. Apart from these special difficulties in the application of the scheme to hospital practice, there are other objections which arise from the present lack of standardisation. In the first place, there are still a few societies which provide no dental benefit at all. The majority of them pay the whole cost of treatment according to the agreed scale issued by the British Dental Association and the Public Dental Services Association, but a few societies demand from the member a portion of the cost, generally 25 per cent. The grant for dentures is far from uniform, and although 50 per cent. of the total cost is now the rule there are still societies which reimburse the whole cost and others less than one-half. Complete suspension of benefit may occur at any moment, for the societies put aside a certain sum annually for this purpose, and if this sum is spent before the end of the year dental benefit ceases until the following year. Two of the largest societies had, in the autumn of 1927, used up the allotted funds. These variations involve real unfairness to the patients who have all paid their quota at the same rate, and engender in them a sense of soreness and bewilderment. At the same time they make the administration of dental benefit from the hospital side both difficult and unsatisfactory, and involve a vast amount of correspondence. On the other hand, the adoption of a standard dental letter is a step forward, and the more progressive societies are acting more and more on standardised lines.

A FAMOUS MEDICAL JOURNAL.

THE New Year issue of the Münchener Medizinische Wochenschrift is a Festschrift in celebration of the seventy-fifth birthday of the journal, for the first number appeared on Jan. 7th, 1854. It was from the start the property of a standing committee of Bavarian doctors, and, although modest in size, its scope was so ambitious as to incur pessimistic criticism from Rudolf Virchow who was then nothing more than an official medical officer to one of the smaller divisions of Bavaria. Like the birth of other great medical journals, the happy event had been preceded by a number of miscarriages. The Medical Correspondence Sheet founded by Dr. H. Eichhorn in 1840 survived for barely ten years, while the Medico-political Sheet of Dr. v. Jan ran for less than a year; but it was endeavours of this kind which encouraged the firm of Christian Kaiser to issue a journal which bore for 30 years the title Medical Intelligence Sheet, Organ of Bavarian State and Public Medicine, the financial success of which was ensured by the decision of the Government, two years after its foundation, to distribute it officially to all local authorities and their medical staff. This official relation lasted until 1874 when the conduct of the journal came into the hands of an independent group of medical men, headed by Otto von Bollinger, under whose influence the youthful BERNHARD SPATZ was appointed in 1885 to the editorial chair, and a year later the journal was rechristened under its present name. It was in 1890 that the business side of the paper was taken over by the present publisher, J. F. LEHMANN, in whose hands it rapidly developed from a provincial medical journal into one of worldwide importance. Financial difficulties were then a thing of the past right up to the post-war currency inflation, when the journal

lost its accumulated capital, but was just able to carry on. The military supplement was distributed gratis to all medical officers in the field from 1914 to 1917, when the paper famine made it impossible, and during the last 25 years, in spite of all these difficulties, the sum of nearly 250,000 marks has been allotted out of profits in grants towards scientific and benevolent purposes.

The first three volumes of the journal, which are now difficult to obtain, throw many interesting sidelights on contemporary medical history, some of which are dealt with fully in an introductory article by Prof. Hermann Kirschensteiner which appears at the front of the festal issue. From it we learn that 50 German medical men voluntarily took part in the Crimean War of 1855, of whom 10 died on service and only 6 returned unscathed. The early numbers bear witness to a vigilant struggle against the homœopathic influence which was then widely spread throughout the kingdom. Paris was still the favourite centre of post-graduate study for Bavarian doctors; and there is an instructive passage in a Paris letter dated 1856, giving an account of hospital pyæmia with the query: "Where is the poison? is it in the hospital air? Do the hands of the surgeons carry it? I would give my life to buy these secrets." Semmelweis had already published his early work, but it was B. Breslau who pleaded in an issue of 1854 for strict separation between the healthy and the sick puerperium, for he had seen that the mortality in childbirth which amounted to 4 per cent. in Paris and 5 per cent. in Vienna, was only 1 per cent. in Dublin with its cubicle system. The early days of the journal saw the rise of Pettenkofer to fame in connexion with the second outbreak of cholera, which killed 3000 of the 5000 persons attacked, although it seems that no Munich doctor died of it. Pettenkofer set out in the journal his subsoil theory of causation which for so long held the field. Another historic discussion concerned the infectious character of secondary syphilis, which was then generally denied. A certain Dr. Hübner had the misfortune to infect a number of vaccinated children with syphilis; he was sentenced to six months' imprisonment and discharged the service, although a number of his colleagues were prepared to assert that infection could not be conveyed in this way. These issues also contain the record of the third case of Cæsarean section, carried out by Rothmund; the child survived, but, as in both previous cases, the mother died. In these early days it is surprising to learn that the medical profession in Bavaria was already regarded as overcrowded. In the whole kingdom there was one doctor to 3784 persons; in Munich itself the proportion was 1 to 1050, and in Würzburg 1 to 619, not reckoning the professorial staff. The mortality among them was terrible. In 1855 the average age of the practising doctors was only 44·4 years; no more than 29 per cent. of the profession lived to 50 years, and 9 per cent. to 60 years. Medical practice at this time was to all intents a State service; the newly qualified man could not choose where he would settle. He was nominated to a district where there was a vacancy, and permission to practise in Munich itself was only granted after three years' rural experience—the so-called triennium rusticum. The experience of this system was not happy, especially in Nassau where it was most strict, and through the influence of Karl v. Pfeufer the State control was set aside entirely in 1865. So much for the early years. In its later history the journal contained the account of Pettenkofer's self-experiment with cholera vibrios in 1892, the Nobel prize lecture of Ehrlich in 1909 on the partial functions of cells, the most part of his early work on salvarsan, and his exposition with Gruber of the side-chain theory. Orthodiagraphy was described in the journal by Moritz in 1900, and in 1903 Albers made the first communication on the risk to the genital glands from exposure to X rays. The journal was also the first to take hypnosis seriously by the publication in 1894 of Forel's work on treatment by its means.

In another part of the festal issue, and printed in the small characters in which the Editor modestly conceals his own hand, is an interesting apologia for the advertisement part of the Munich medical journal. Many doctors, he says, have so little understanding for its value that they are actually hostile and regard this section as an unworthy bedfellow of the scientific part. The hostility, he recognises, is directed not so much to the advertisements in themselves as to the over-production of drugs. It would, however, he reminds German doctors, be thankless on their part to overlook how much they owe to the chemicopharmaceutical industry, if only for the reason that without their collaboration the size and compass of the journal would have to be considerably reduced. He takes for granted a strict censorship by the medical press of the advertisements which are accepted, and first and foremost the refusal of any influencing of the text by the advertising firms. This censorship has for long been assumed by the Editor of the Munich journal and has worked well. With these essential postulates, flourishing advertisement columns fill an important place in the framework of the journal, putting its readers in touch with information and announcements which cannot appear in the text, with new appearances in the book and instrument markets, with the latest information about baths and drugs, and providing a useful balance to devote to relief of medical suffering, to the furtherance of scientific work, to the support of medical libraries, and to supplying impecunious German doctors abroad with medical literature. Certain it is that collaboration of editor and publisher in the case of the Münchener Medizinische Wochenschrift have brought forth one of the premier medical journals of the world, and we offer Dr. SPATZ and Mr. LEHMANN our homage.

Annotations.

"Ne quid nimis."

VITAL STATISTICS FOR 1927.

THE Registrar-General has issued a provisional statement of the figures for birth-rate, death-rate, and infantile mortality during the year 1927.

—	Birth-rate.	Death-rate.	Infant mortality-rate.
England and Wales ..	16·7	12·3	69
107 county boroughs and great towns including London	17·2	12·3	71
155 smaller towns ..	16·5	11·4	68
London	16·1	11·9	59

The smaller towns are those with an estimated population in 1921 of 20,000–50,000. The death-rate for England and Wales relates to the whole population, but that for London and the two groups of towns to the civil population only. Birth-rate and death-rate are per 1000 population, infant mortality-rate per 1000 births.

The Registrar-General remarks that the birth-rate is 1·1 per 1000 below that of 1926, and is the lowest rate recorded since the establishment of civil registration. The death-rate is 0·7 per 1000 above that of 1926; the excess being due to the high mortality of the first and fourth quarters of the year. The infant mortality-rate is equal to that of 1923, the lowest on record; the rate in 1926 was 70 per 1000 births. These provisional figures, which are not likely to require substantial modification, have been issued for the information of medical officers of health.

AFTER THE FLOOD.

THE conference held last Monday afternoon at the Ministry of Health to review the situation resulting from the recent flood disaster in London was attended by representatives of the London County Council, of various Government departments, and of the riparian authorities. Sir Kingsley Wood, who presided, explained that the conference had been called at the instance of the Prime Minister and its immediate duty was to settle what action should be taken to prevent a repetition of a disaster which had undoubtedly been brought about by a peculiar combination of circumstances. On behalf of the London County Council, Mr. Gatti stated that the Council's only responsibility was based on an Act of 1879, under which the Council may require owners of riverside premises to carry out flood prevention works to its satisfaction, or, in default, itself execute the works and recover the cost. The height of such works had originally been fixed by the Metropolitan Board of Works at 17 ft. 6 in. above datum-line, and this was raised to 18 ft. after the record tide of January, 1881. Since that date, 47 years ago, the tide had only once equalled and never exceeded 17 ft. 6 in.; on Dec. 26th last it reached three inches short of that figure, that is to say, the second highest point on record, without producing any signs of flooding. Existing works, he said, had now been so seriously damaged that occupation of basements in low-lying areas would be attended with danger at spring tide for some while ahead. The Council had already undertaken to institute a survey of the whole of the river defences. Speaking on behalf of the Port of London authority, Lord Ritchie said that, while normally in the course of the last hour of a flood-tide the river did not rise more than 1 ft., it actually rose 2 ft. in the last hour of the tide on the morning of the catastrophe. The desirability of raising the level of the banks required, he thought, careful consideration in view of the large expenditure involved and the improbability of the recurrence of such a tide. In any case as the work must take years to complete, it was desirable to consider whether the public could not be warned of the approach of a high tide. Any warning, to be effective, would have to originate outside the estuary of the Thames, and inquiries were on foot to see if information of the approach along the coast of a phenomenal tide could be obtained in sufficient time to give warning through the police or other authorities. Lord Desborough, on behalf of the Thames Conservancy, said that he thought the height of the tide was not greatly affected by the volume of water coming down from the upper reaches of the river. The recent disaster was due rather to the combination of a north-westerly gale with an exceptionally high flood tide. Alderman Ben Smith, M.P. for Bermondsey, pointed out that the existence of a 71 minute delay between high tide at the Isle of Dogs and at Teddington should have allowed time for warning to be given. He also remarked on the lamentable state of 600 families in Rotherhithe whose homes had been destroyed by creosote. Mr. Gatti, in reply, stated that the London County Council did not repudiate its statutory responsibility, but he contended that the adequacy of the river defences had been proved by the fact that on Boxing Day the second highest tide on record for 60 years was experienced without any signs of flooding. The conference, before adjourning, decided to set up a small subcommittee under the chairmanship of an assistant secretary of the Ministry of Health, to which the various suggestions would be referred.

SIR MACKENZIE CHALMERS.

A MEMORIAL service for Sir Mackenzie Chalmers, who died on Dec. 22nd, 1927, will be held at the Temple Church on Tuesday afternoon, Jan. 31st, at 4.45 P.M. We are reminded by this announcement of the services which, throughout an extraordinarily full official life, Sir Mackenzie rendered to the cause of medicine. He was consecutively a member of the Indian Civil Service, a Counsel to the Board of Trade, a county-court judge, a Commissioner of Assize, and a Law Member of the Viceroy's Council in India; then he was appointed, some quarter of a century ago, First Parliamentary Counsel to the Treasury, and finally, until retirement in 1908, Permanent Under Secretary of State for the Home Department. In this capacity he was a member of a Royal Commission on Vivisection, of a Departmental Committee on Coroners and Deaths under Anæsthetics, and of the Sleeping Sickness Committee, while later he served as chairman of the Committee on the Standardisation of Biological Drugs. While these had been his various responsibilities towards medicine in an official capacity, his private interest in our profession was well displayed in his chairmanship of the London Fever Hospital, in whose cause he was untiring. Medicine owes a real debt to Mackenzie Chalmers.

PROFESSIONAL SECRECY.

AN interesting report on medical confidences has just been issued in France,[1] where it appears that the accepted tradition of absolute professional secrecy has been threatened by a recent decision of the Conseil de Préfecture of Châlons-sur-Marne (May 27th, 1927). The committee which has produced the report calls upon the profession to protest vigorously against claims which would seem to demand disclosure of the diagnosis of diseases treated at patients' houses. The report insists that the legal position should remain where it stood after the decision of the Cour de Cassation in the Watelet case in 1885. No more vigorous defence of the confidential relations of doctor and patient has been made in England, but the English reader has to remember that the position in France rests not upon a professional tradition partially recognised by the law courts but upon an express enactment in the French penal code. This enactment (Article 378) is not set out in the recent report but deserves attention.

"Les médecins, chirurgiens et autres officiers de santé, ainsi que les pharmaciens, les sages femmes et toutes autres personnes dépositaires, par état ou profession, des secrets qu'on leur confie, qui, hors le cas où la loi les oblige à se porter dénonciateurs, auront révélé ces secrets, seront punis d'un emprisonnement d'un mois à six mois et d'une amende de cent francs à cinq cents francs."

It would appear to follow that secrecy must be maintained even after the patient's death, whereas in English practice death is regarded as lessening the duty of secrecy. Under English law, indeed, the patient's remedy in this respect (for breach of professional secrecy) dies with him. It is noteworthy that the French committee's report contains objections even to the disclosure of information regarding the cause of death. Such violation of secrecy, it points out, has grave inconveniences; the doctor, wishing to protect the dead patient's memory, inclines towards a misleading diagnosis—cerebral hæmorrhage, for instance, instead of cerebral syphilis, or (where disclosure of diagnosis would amount to actually charging a party with a crime) peritonitis instead of abortion.

In England, where the absence of an all-embracing codification of the law has left so many matters a little indefinite, the position could not be put so high as in France where the profession can insist on the logical consequences of Article 378. When the Duchess of Kingston was charged with bigamy in 1776 and Cæsar Hawkins made the traditional protest against being required in his evidence to reveal something of which he had become aware in his professional capacity, Lord Mansfield summed up the position quite clearly. "If a surgeon was voluntarily to reveal these secrets, to be sure he would be guilty of a breach of honour and of great indiscretion;

[1] Bull. de l'Acad. de Méd., 1928, xcviii., 650.

but to give that information in a court of justice which by the law of the land he is bound to do will never be imputed to him as any indiscretion whatever." Mansfield was stating the law in the peculiar atmosphere of the criminal trial of a peer of the realm; the legal position was explained more fully and more recently in 1881 by Jessel, M.R., in Wheeler *v.* le Marchant, where the absolute privilege of the lawyer was contrasted with the limited privilege of the priest or the doctor. "It must not be supposed that there is any principle which says that every confidential communication which it is necessary to make in order to carry on the ordinary business of life is protected; the protection is of a very limited character and in this country is restricted to the obtaining of the assistance of lawyers as regards the conduct of litigation or the rights to property." It is this anomalous distinction between legal and medical privilege which surprises the English public and which will probably lead to some amendment of the law. The contradictory directions given by the State in the case of venereal disease clinics has naturally focused attention on the doctor's dilemma. "Keep absolute silence," say the Regulations of the Ministry of Health. "Tell us all you know," say the law courts. This is a contradiction which no departmental exposition can mitigate. In France, it seems, it is the department which is insisting upon the breach of secrecy.

ATROPHY FROM DISUSE.

ATROPHY of voluntary muscle from disuse has been generally accepted as a pathological fact for many years, and such disuse has by some been supposed to account fully for the wasting of muscles cut off from their central nervous centres, as well as for that of the muscles connected with ankylosed joints, and for wasting after fracture or prolonged immobilisation for any reason. But this view of the pathology of atrophy is not universally held, and those who rejected it have always been able to point to certain facts that cannot be accounted for in that way. The marked and permanent atrophy of the quadriceps, which follows on fractured patella, no matter how complete the anatomical restoration may be, offers a case in point. Again the muscular atrophy in bone or joint disease is much more rapid than that which follows on prolonged immobilisation for the correction of deformity and such-like. This wasting is not prevented by electrically stimulated contractions. Such atrophy is more extensive and lasting in adults than in children. All these and other considerations are set forth by Mr. N. Ross-Smith, surgical registrar to the Royal National Orthopædic Hospital, in a paper [1] in which he adduces the evidence afforded by the condition of a muscle which can never have done any work at all. Such is the so-called peroneus, more accurately named tibio-fibularis, which Mr. Ross-Smith has dissected and examined in two cases of congenital absence of the tibia and which Sir Arthur Keith has described in a case of Mr. R. Ollerenshaw's. As this muscle in all three cases had no insertion it was incapable of doing any work at all and was in a condition of more complete disuse than any normal muscle could be. Yet macroscopically and microscopically it was found to consist of normal healthy fibres and showed not the slightest sign of degeneration. In life the muscle had not been known to shorten. As the ages of the three patients ranged from 2 to 15 years there had been ample time for atrophy to show itself. The illustrations of Mr. Ross-Smith's paper show very clearly the histological and naked-eye appearances of the parts concerned. Despite experiments and investigations made in recent years, there is still evidently a good deal to be learnt as to the nutrition of muscle and much more extensive research will be necessary before we can hope to have a complete knowledge of the subject, to obtain which the very significant conditions found in congenital deformities will have to be taken into account. When we know all the factors concerned in the atrophy and restoration of disused muscles and the ways in which these factors exert their influence we may hope to be on the way to understanding the pathology of Volkmann's ischæmic paralysis to an extent that is beyond us at present. Such knowledge will probably prevent those catastrophes which are disastrous to the patient and most disconcerting to the surgeon, who is lucky if he escape an action at law and the payment of heavy damages as was demonstrated quite recently.[2]

[1] Jour. of Anat., lxii., 238.

CRYSTALLISED TUBERCULIN.

DURING the last 18 months a whole series of reports on the active principle of tuberculin have been published by Dr. Esmond R. Long and Dr. Florence B. Seibert [3] from the Sprague Memorial Institute and the Department of Pathology of the University of Chicago. Through coöperation with other organisations these workers have been able to avail themselves of enormous quantites of tuberculin—literally many gallons. The starting-point of the research was the growth of the tubercle bacillus on a protein-free fluid medium from which the bacillus was able to elaborate protein. The advantage of tuberculin produced in this way is that substances produced in the medium by the growth of the bacillus can be readily separated since all the constituents of the medium before growth are already known. Having obtained an almost unlimited supply of tuberculin in this way the authors proceeded to investigate the product by methods of dialysis, adsorption, enzymic action, and protein precipitation. Briefly recorded, the results of these investigations are as follows. The active principle of untreated tuberculin would appear to be a colloidal substance which does not pass through animal and vegetable membranes. This colloid gives all the usual protein tests and can be precipitated by acids at its isoelectric point, pH 4·0. Saturation with ammonium sulphate precipitates all detectable protein, this precipitate possessing the typical toxic properties of tuberculin. Proteolytic enzymes lessen or destroy the activity of this tuberculin in proportion to their power of splitting up the protein molecule; hydrolysis by hydrochloric acid also destroys activity in the same way. The next step was to obtain the protein constituent of tuberculin in a pure state. After extensive experiment Dr. Seibert [4] has succeeded in recrystallising the protein portion as many as 14 times, and has shown that this product, which is crystallisable into needles and burrs and is labile and unstable in water, has a greater potency than the original.

[2] THE LANCET, 1927, ii., 1318.
[3] Amer. Rev. of Tub., 1926, xiii., 393; and Tubercle, 1926, viii., 111.
[4] Jour. Amer. Med. Assoc., Dec. 3rd, 1927 (editorial).

TYPHOID FEVER IN CHILDREN.

SINCE no epidemic of typhoid fever of any magnitude has occurred in any large town in this country during the present century, it seems to follow that much of what is written of the disease in modern text-books of pædiatrics cannot be based upon personal observations. Hence the value of a paper [5] by Dr. Saul J. Usher in which he describes 116 cases of typhoid fever in children under his personal observation in the Montreal epidemic of 1927, and 59 others to whose records he had access. The epidemic was transmitted by milk, which no doubt accounts for the large number of children under the age of 5 years who were affected. The onset was fairly rapid with fever, headache, loss of appetite, and general malaise as the most prominent symptoms. Gastro-intestinal symptoms were rare at the onset, epistaxis occurred in 17 per cent., mostly older children, while convulsions were noted only in one instance, an infant of 9 months. With the disease established the average temperature was 101°–103° F. in the majority of cases, while the pulse-rate varied between 90 and 120. Constipation was

[5] Canad. Med Assoc. Jour., 1927, xvii., 1486.

present in most patients; vomiting and loss of appetite were quite infrequent. Nervous symptoms were often noted during the course of the disease; in the younger children taking the form of restlessness, irritability, and fretfulness; in the older children of dullness, apathy, or listlessness. Delirium occurred during the height of the fever and rarely needed special treatment. In most cases the rash was scanty, seen chiefly over the abdomen and lower back; splenic enlargement was appreciable to the finger in 138 out of the total 175 cases. To turn to the laboratory findings: a positive Widal reaction was obtained in 91 per cent. of cases, and of these 59 per cent. were positive in the first ten days of the illness. Blood culture taken in 71 cases proved positive for the typhoid bacillus in 50 and completely negative in the remainder; in no case was paratyphoid A or B found. The cholesterol content of the whole blood was estimated in 15 acute and in 13 convalescent cases; in each case the cholesterol was found to be definitely increased, more so in the acute, and its fall to normal was very gradual after recovery. Complications were numerous and included suppurative processes such as otitis media and furunculosis. Intestinal hæmorrhage occurred in five cases, and perforation in four; ulcerative laryngitis in two cases. Only three patients relapsed and 12 died, a total mortality-rate of 6·8 per cent. For treatment, hydrotherapy was systematically employed, sponging being preferred. Diarrhœa never needed interference and constipation was dealt with by liquid paraffin. The original paper will repay study.

THE USES OF EPHEDRINE.

SINCE the rediscovery of the alkaloid ephedrine from the plant *Ephedra vulgaris* by K. K. Chen in 1923 there has been gradually accumulating a large volume of literature dealing with its use and effects in the treatment of asthma.[1] T. L. Althausen and I. C. Schumacher in a recent paper [2] report the use of this drug in a number of morbid conditions and summarise their personal experience with it in the treatment of bronchial asthma and hay fever. They point out that for 5000 years decoctions of the plant have been used in China as a diaphoretic and antipyretic, and at the time of the original discovery of the alkaloid, by K. Nagai in 1887, investigators were mostly concerned with its mydriatric properties. The present authors used it in nine cases of chronic vascular hypotension, giving it by the mouth in doses of 50 mg. three times a day. In all cases a rise of systolic blood pressure varying from 9 to 46 mm. was obtained in five minutes to an hour after administration and the pressure remained up for four hours or more. As far as subjective symptoms were concerned, three patients only felt stronger while the remainder noticed no change. In the acute fall of blood pressure encountered in conditions of shock or after severe hæmorrhage ephedrine might be expected to be of considerable use, but the authors conclude that its beneficial effects are doubtful and that favourable results are only to be expected if it is given early or as a prophylactic. They quote certain opinions to the effect that ephedrine may be definitely harmful to the heart under such circumstances. With regard to the use of the drug in other conditions, a dramatic result was obtained in one case of toxic erythema five minutes after 65 mg. of the drug had been taken by the mouth. In seven cases of urticaria ephedrine was tried, but only doubtful benefit was obtained in two of them, while three patients with angioneurotic œdema failed to react favourably after administration of the drug. More consistent results were observed from the use of ephedrine of asthma in a series of 39 cases. Complete relief was obtained in 56 per cent. and in a further 24 per cent. partial relief. In order to eliminate a purely psychical effect the authors estimated the vital capacity and blood pressure before and after treatment. In one patient, 15 minutes after taking the drug, vital capacity was increased from 20 per cent. of the normal to 33 per cent. and the systolic blood pressure had risen by 20 mm. These objective results corresponded with a marked subjective improvement leading to complete relief from the attack. It is found that undesirable effects, such as nausea and vomiting, are especially likely to occur if adrenalin has previously been employed; some tolerance to the use of the drug was observed in 15 per cent. of cases. With regard to the possibilities of harm from the repeated administration, it is suggested that more observations on the question of renal irritation would be of value since red blood cells and casts were found in the urine of several patients after only a short course of the drug. Observations of this sort are welcome in determining to what extent the therapeutic value of this promising alkaloid is limited by toxic effects.

[1] See also THE LANCET, 1927, ii., 669.
[2] Arch. Int. Med., 1927, xl., 851.

THE PREVENTION OF PERITONEAL ADHESIONS.

Dr. J. R. Buchbinder,[1] of Chicago, has lately published some experiments upon the prevention of the formation of peritoneal adhesions. His object seems to have been to discover some method by which a tube inserted into the peritoneal cavity could be made to act as a drain for a considerable period. He has succeeded in so far as he has proved that, in normal animals, a serous transudate can be provoked by the intraperitoneal injection of hypertonic dextrose solution, and that if this effusion is voluminous enough fibrin-formation, and so the encapsulation of a rubber drainage-tube, is prevented. In such a way a profuse discharge may be made to exude from a drainage-tube for several days. Further, he has shown that this statement holds good if a chemical or mechanical irritation of the serous coat of the intestine is produced at the time when the tube is inserted. Attention is directed to this experimental work because it illustrates how difficult it is for a research worker to resist the temptation to introduce a modification in the treatment of disease upon the very insufficient grounds of the results of experiments which may not have any relevance at all to the problem concerned. Dr. Buchbinder says "the method opens up possibilities in the prolonged drainage of the peritoneum in cases of diffuse peritonitis." By this he tacitly assumes that the average surgeon would desire to see a profuse flow of serous fluid emerge from his abdominal drainage-tubes inserted for peritonitis, at the expense of the fibrin-forming and thereby infection-localising power of the peritoneum. It is axiomatic that in any infected wound an outward serous flow is desirable and all successful methods of treating acute infections are hyperæmia-producing, lymph flow-promoting procedures. Fomentations, radiant heat, hypertonic salt, the mere opening of an abscess or the incision of a cellulitic area, all have for their object the increase of the flow of lymph or its revived circulation where perhaps stasis already exists. Yet such increased exudation of fluid can be bought too dearly, and in the case of the peritoneum it would seem unwise to adopt, without a much fuller investigation, a method which interferes with that wonderful localising reaction which can only take place if fibrin is allowed to form and glue adjacent viscera to one another in the production of a defensive barrier to the extension of the infection. Moreover, however desirable such profuse flow of serous fluid is, it must ever be remembered that peritonitis is more often than not caused by streptococci, organisms which flourish in the lymph, the serophytes of Sir Almroth Wright. Such organisms can be fought only by the leucocytes which of necessity must have access to them. Tissue culture experiments have shown that the migration of cells cannot take place in a fluid medium alone. Some support is necessary for their movement. This is provided in the body by the network of coagulated lymph which covers the surface of raw or inflamed

[1] Surgery, Gynecology, and Obstetrics, 1927, xlv., 769.

viscera. In the scaffolding of fibrin leucocytes can move; they can reach the infecting organisms which they alone are able to attack. So important is this cellular defence against infection that the use of any agent which directly limits or interferes with fibrin-formation in the infected peritoneum is strongly to be deprecated. Drainage for diffuse peritonitis is always necessary, but the surgeon in instituting it hopes thereby to bring about localisation of the process. He is not likely to do this by interfering with the production of fibrin. The problem of peritoneal adhesions is not the prevention of their formation during an acute infective process, but the elucidation of the cause of their formation, and especially the failure of their resolution in some abdominal affections which have never been acute, and, at any rate at their inception, may not even have been infections at all.

A PORTABLE BASAL METABOLISM APPARATUS.

ESTIMATIONS of basal metabolism may prove of value in determining the relative vital activities of groups of individuals of different races. It has recently been shown that the metabolism of healthy Japanese, Chinese, and American women students living under the same conditions in the same college showed a racial difference, the metabolism of the Japanese and Chinese being perceptibly lower than that of the Americans. Confirmation of this fact has led anthropologists during the past year to develop a project for studying the metabolism of various races in different parts of the world. A stumbling block to such a project, however, is the complicated nature of the apparatus for estimating basal metabolism and its unsuitability for use in regions remote from laboratories. In a recent paper[1] Dr. F. G. Benedict describes his modification of the student respiration apparatus, designed by Benedict and Benedict in 1923, to meet these fresh requirements. The principle of what he calls a "field respiration apparatus" is the introduction of a measured amount of pure oxygen into a closed circuit and the estimation of the time taken for its absorption. This method does away with gas analysis and the need for a gasometer, while it gives an accurate record of the oxygen consumed. The technique is briefly this: the subject breathes through a rubber mouthpiece into a circuit containing oxygen-rich air. This closed circuit consists of a metal can, partly filled with soda lime, to absorb the carbon dioxide given out, and covered with a light rubber bathing cap for the expansion and contraction of air during respiration. The oxygen consumed is replaced from a rubber bag by oxygen saturated with water vapour and delivered in measured quantities into the circuit by a pump of known and constant volume. The experiment begins and ends with the bathing cap at a definite degree of distension, indicated by an index button on the tip of the cap in contact with a fixed point, the oxygen introduced during the experiment being thus equal in amount to the oxygen consumed by the subject. The only major measurement needed for the calculation of the basal metabolism with this apparatus is the time required for the absorption of six pumpfuls of oxygen, normally about ten minutes. Dr. Benedict describes the various parts of the apparatus and the technique of an experiment in detail, and sets out possible sources of error and the means of obviating them. The apparatus, he says, is already being used in Hong-Kong, Jamaica, Peru, Mexico, New Guinea, and South Australia. Those who have used a simple apparatus of this type for estimating basal metabolism cannot fail to be impressed by the ease and simplicity of the process compared with the complicated type in which the analysis of a sample of expired air, followed by calculation, is a prelude to the measurement of the oxygen absorbed.

[1] A field respiration apparatus for a medical and physiological survey of racial metabolism, Boston Medical and Surgical Journal, Dec. 22nd, 1927.

A TUBERCULOSIS SURVEY AMONG SCHOOL-CHILDREN.

IN the *Journal* of the Norwegian National Association against Tuberculosis for December, 1927, is an account by Prof. Th. Froelich of a tuberculosis survey of school-children started by him in 1912. He wanted to know how many children were already infected by tuberculosis in Oslo at the age of 7, when school begins. To work with as uniform a material as possible he selected the children who had been born between September, 1904, and September, 1905, examining clinically and with the Pirquet test 2900, or 66 per cent., of all the children in Oslo aged 7 years. With the help of the public health authorities his findings were correlated with the notifications of tuberculosis in the town, so that fairly accurate information was available as to the degree of exposure to infection to which each child was subjected. The visiting tuberculosis nurses of the public health service made inquiries at the homes of all the children, and were thus able to follow up the careers till the age of 20 of all except those who left the town before this age. Much of the information obtained in this way is of considerable interest and should help to stimulate the organisation of similar surveys elsewhere. It was found that 84 per cent. of the children were already Pirquet-positive, and that between 4 and 5 per cent. already showed clinical signs of tuberculosis. In 4·8 per cent. there were infectious cases of tuberculosis in the homes. At the end of 1925 75 per cent. of all the children were traced, and of the 1830 children found in 1912 to be Pirquet-positive, as many as 223 (or 12·2 per cent.) had subsequently developed tuberculosis, and 79 had died of it. The deaths from tuberculosis were twice as frequent among the girls as among the boys; for every 1000 boys who were Pirquet-positive at the age of 7 20 died of tuberculosis before the age of 20, whereas for every 1000 girls in the same category there were 39 deaths. The fate of the 332 children who were Pirquet-negative at the age of 7 depended largely on their sex. When the boys and girls were taken together the subsequent incidence of tuberculosis among them was somewhat lower than that among the boys and girls who had been Pirquet-positive at the age of 7. But when the originally Pirquet-negative children were classified according to sex it was found that the subsequent death-rate from tuberculosis among the girls was as high as 5·4 per cent., whereas it was only 0·6 per cent. among the boys. The tuberculosis death-rate among the girls who had been Pirquet-positive at the age of 7 was 3·9 per cent. As was to be expected the tuberculosis incidence was considerably higher among the children in whose homes there were open cases of tuberculosis than in homes free from tuberculosis.

CANCER OF THE UTERUS.

A RECENT report by the Ministry of Health's Departmental Committee on Cancer[1] analysed some 80,000 cases of cancer of the uterus reported from all over the world. Most of them were foreign, and owing to the apparent disinclination of English surgeons in general to publish their results it has been difficult to decide whether the conclusions were applicable to practice in this country. In order to settle this question the Committee has taken advantage of an investigation which Mr. W. McK. H. McCullagh was making at the Samaritan Free Hospital, where high-grade treatment has been given by a number of different surgeons over a suitable period. The facts elicited are described in a further report,[2] and it is satisfactory to find that in nearly 900 cases treated between 1901 and 1920 the results were as good as, or better than, the average deduced from reported cases at home and abroad. The percentage of patients whose

[1] Ministry of Health Report on Public Health and Medical Subjects, No. 40.
[2] Ibid., No. 47. H.M. Stationery Office. 9*d*.

condition was deemed operable was much the same as the average, being 52·8 for cancer of the cervix and 78·8 for cancer of the body of the uterus. The operative mortality for the former condition was, however, only 8·6 as against 17·3, and though for cancer of the body it was higher (11·9) the sample was a small one. Of patients who had abdominal hysterectomy for cancer of the cervix 43·8 per cent. were alive after five years, and 36·6 per cent. after ten. For cancer of the body the percentage of survivors after five years was 61·5. These results, it is pointed out, might be greatly improved, and in cervical cases the successes could probably be almost doubled, if patients would attend for treatment in the early stage of the disease. In the Samaritan Free Hospital series the mean alleged duration of the symptoms was about six months in cases considered still operable; and by this time nearly 50 per cent. of cases are beyond surgical treatment. The time elapsing before patients applied on account of symptoms of cancer of the body of the uterus was found on the average to be about 18 months. Among other conclusions drawn from this report is that in cancer of the cervix younger women are under no disadvantage as regards prognosis, whilst consideration is also devoted to the possible association of cancer of the uterus with miscarriages. "There can be little doubt," it is stated, "of the closer association of miscarriages with cancer of the uterus" than with cancer of the breast, and the suggestion is made that this association should be further studied. As was mentioned in our summary [3] of a circular issued by the Ministry a fortnight ago, it is not the number of children born, but the fact of a birth having taken place, that is of importance in the ætiology of cervical cancer.

The present report, which is the work of Dr. Janet Lane-Claypon and Mr. McCullagh, is a useful appendix to those previously issued. It contains no evidence bearing on the value of radiological treatment, as this was hardly used at the hospital during the time covered by the inquiry.

SOMATIC CHANGES IN MENTAL DISEASE.

THERE are some enthusiasts who tackle light-heartedly the problem of research into somatic conditions in the hope of quickly solving the riddle of the interaction of mind and body and discovering the cause of insanity in bodily changes. How complex are such changes, and how obscure their relation, whether of cause or of effect, to the mental states in psychoses, is well seen in the results of a careful piece of research conducted in Swedish mental hospitals by Dr. Torsten Sonden.[4] The author set out to investigate the supposed correlation between changes in mental state and certain somatic conditions by means of frequently repeated estimations made over long periods in cases of manic-depressive insanity. In each section he gives a full discussion of previous work, exact details of his technique, and experimental and statistical errors; tables and charts are supplied with the values obtained, while a very full account is given of the 11 cases finally selected as suitable for investigation, including diary notes of their mental states throughout the period. It is evident that Dr. Sonden is a worker whose results have been subjected to the strictest controls. He contends that too much research has been directed to the collection of a few results from each of large—and often diverse—groups of cases, and that the more fruitful line of work is that which he has followed, an intensive examination of the range of individual variations in strictly selected small groups; four of his cases were under investigation for 2½ years, and the rest at least for many months covering different phases of mental state. His general conclusion is that some parallelism between mental and bodily states is shown, but only in certain cases; his results give no evidence of any somatic condition which can be considered to cause the mental disorder or throw any light on its causation. He discusses fully the literature on the subject and the theories which have been put forward, and shows that no conclusive evidence exists as to the action of supposed endocrine and autonomic causative factors in the manic-depressive psychosis. The somatic conditions in which he finds some parallelism with the mental state are temperature and pulse-rate, which are often slightly raised in manic periods, and blood pressure, which is raised in manic and melancholic phases alike. Respiratory-rate does not show similar changes. The erythrocyte count, done at two-day intervals, rose regularly in some, but not all, cases at the transition from normality to either mania or depression, and since the serum albumin shows a coincident rise he suggests that the change is due either to an alteration in the fluid quantity of the blood, or, more probably, a redistribution of fluid between blood and tissues. This probability is increased by the great variability of daily leucocyte counts; these tend to be greater during manic periods, especially neutrophils, but so many factors influence such counts that the figures obtained show no clear evidence as to the connexion of these variations with the mental state. Estimations of blood-sugar, non-protein nitrogen, hæmoglobin, urea-nitrogen, and creatinine show no definite parallelism and the experiments on the effect of adrenalin on blood pressure and on the oculo-cardiac reflex and Loewi's reaction give no definite evidence of any special changes of vegetative tonus accompanying the changes of mental phase.

[3] THE LANCET, Jan. 7th, p. 46.

[4] A Study of Somatic Conditions in Manic-Depressive Psychosis. Upsala Läkareförenings Förhandlingar. New series. Vol. xxxiii. Parts 1 and 2. 10 kroner.

THE death is announced of Dr. Alexander Hodgkinson on Jan. 11th at his home at Farnham, Surrey. Dr. Hodgkinson was largely instrumental in founding the Hospital for Consumption and Diseases of the Throat at Manchester, and for many years served on its honorary staff as physician.

THE bicentenary of the birth of John Hunter will be celebrated by the Royal College of Surgeons of England on Feb. 14th. At 4 P.M. Sir Holburt Waring will deliver the Hunterian oration, and at 8 P.M. there will be a dinner at the College. On Feb. 16th a reception is to be held from 3 P.M. onwards at the College and at 5 P.M. Dr. G. C. Peachey will deliver the Thomas Vicary lecture, his subject being the Home of Hunter.

THE next Congress of the Royal Institute of Public Health is to be held in Dublin from August 15th to 20th, at the invitation of the Government of the Irish Free State. The Minister for Local Government and Public Health has accepted the presidency of the Congress, and a list of vice-presidents has been drawn up. It is intended to distribute the work among four sections: (1) State Medicine, dealing with four groups—namely, (*a*) epidemiology, (*b*) municipal, county, and port sanitary work, (*c*) tuberculosis, and (*d*) housing and town planning. (2) Bacteriology, pathology, and biochemistry. (3) Maternity and child welfare and school medical inspection. (4) Production and control of food and milk. The arrangements in Dublin are in the hands of a representative committee, the honorary secretaries being Mr. G. Sherlock (town clerk), Mr. M. Russell (medical officer of health) and Sir William Thompson.

INDEX TO "THE LANCET," VOL. II., 1927.

THE Index and Title-page to Vol. II., 1927, which was completed with the issue of Dec. 31st, is now in preparation. A copy will be sent gratis to subscribers on receipt of a post-card addressed to the Manager of THE LANCET, 1, Bedford-street, Strand, W.C. 2. Subscribers who have not already indicated their desire to receive Indexes regularly as published should do so now.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CCLIX.

THE TREATMENT OF MINOR DEGREES OF NASAL OBSTRUCTION.

I.* Deflections of the Septum and Abnormalities of the Turbinate Bones.

Since the advent of the operation of submucous resection of the nasal septum there is little doubt that the operation has been much abused, and has been frequently performed when it is quite unnecessary. It must be remembered that a certain amount of septal deviation is the rule rather than the exception amongst the Anglo-Saxon and Hebraic races; it is important then that the practitioner should have some definite guidance as to the question of operation.

The importance of the rôle of infected tonsils and adenoids in the causation of nasal obstruction, especially when associated, as is so often the case, with varying degrees of septal deflection, must be emphasised. Experience in hospital out-patient work has repeatedly shown that the eradication of these septic foci has obviated the necessity for septal operations in many patients sent up as candidates for submucous resection.

Indications for Submucous Resection.

Submucous resection is in present-day surgery almost invariably the operation of choice. Certain cases of *nasal obstruction with marked deflection* obviously require operative interference. Naturally the risk of a subsequent traumatic perforation is great, but provided such perforation be not too far forward the inconvenience is slight, and the perforation may in itself improve the airway. Marked external deformity is, of course, a justifiable indication for operation. In certain cases of *chronic middle-ear catarrh* the straightening of the airway may improve the aeration of the middle ear via the Eustachian tube, or may permit of the introduction of the catheter for purposes of inflation. In deafness due to other causes submucous resection is in my opinion but seldom productive of improvement. An appreciable number of cases of *persistent frontal headache and supra-orbital neuralgia* are due to deviations of the upper part of the septum. The symptoms are probably caused by interference with the ventilation of the fronto-ethmoidal cells, and the straightening of the septum has most satisfactory results. In cases of *hay fever or asthma* where the presence of a septal deviation is aggravating the condition; also in *epistaxis* where the bleeding comes from the summit of the convexity or is due to the collection of dust in the pocket of a deep concavity. Resection of the septum may give most beneficial results in cases of *unilateral atrophic rhinitis* occurring on the roomy side of a nose. Lastly, the operation may be required as a preliminary to the efficient treatment of *nasal polypi*, or of suppuration in the accessory sinuses.

It must not be forgotten, however, that in many cases of nasal obstruction a deflected septum may be merely an accessory after the fact, the real criminal being a chronic rhinitis or a diseased sinus. Here it is obvious that the septum is not to be sentenced until the other offenders have been dealt with.

Collapse of the Alæ Nasi.

Collapse of the alæ nasi is not infrequently the cause of nasal obstruction. Such collapse is almost always associated with the presence of adenoids or of a septal deflection, and the practitioner may well overlook the alar deformity in the presence of the other abnormalities. He is then apt to be disappointed when the symptoms do not disappear after the removal of the adenoids or the anatomically successful straightening of the septum. In the adult, of course, the alar collapse may persist long after the causative adenoids have undergone their customary shrinkage. It is often possible to relieve the condition by means of suitable breathing exercises, thus developing the atrophied dilators of the alæ. The patient should be shown the appropriate movements, and should practise them systematically three or four times daily. At the outset the practice should take place in front of a mirror until the muscles are well under control. If obstruction persist despite the exercises the use of Francis's nasal props may give much relief—these cause but little distress either physically or cosmetically.

Enlargement of the Turbinate Bones.

The other great cause of nasal obstruction to be considered is the enlargement of the turbinate bones. Such enlargement occurs in three stages: (1) Slight general thickening of the mucous membrane. (2) Turgescence. (3) True hypertrophy. These are the pathological changes found in patients suffering from what is popularly designated catarrh.

The first stage is liable to be a sequela of the acute rhinitis associated with the specific fevers, but may also be due to occupational conditions—for example, in stonemasons or tobacco workers, or to injudicious dietetic habits or insufficiency of outdoor exercise. Treatment then consists in the use of the nasal douche—I prefer the use of an all-rubber nasal bulb to the "sniffing" method as less likely to cause headache—or in regulation of the occupation, diet, or exercise of the patient.

Turgescence and true hypertrophy are prone to cause the practitioner to make errors of diagnosis; fully 50 per cent. of the patients sent to out-patient departments labelled "polypi" are in fact suffering from turbinal enlargement. Great disappointment and a certain amount of loss of faith are evinced when no polypus is forthcoming. The naked-eye appearances are admittedly often very similar, and the practitioner would do well to remember that without the use of cocaine and the nasal probe the differential diagnosis may be extremely difficult.

In the turgescent stage the application of cocaine and adrenalin will cause almost complete collapse of the swelling, and it is in such cases that the use of the galvano-cautery is extremely beneficial. It is generally advised that a deep line be made with the cautery point to cause a subsequent fibrosis, but experience shows that relief is often obtained by a light superficial application, which probably has a beneficial action on the vasomotor mechanism. A point to bear in mind is that a very pale and excessive turgescence is found in those addicted to snuff-taking, a practice which is more common than is usually suspected amongst shop assistants, who are debarred from the use of tobacco during working hours. The tumefaction may involve both the anterior and posterior ends of the bone, and in advanced cases partial turbinectomy of one or both ends may be required.

In the third stage there is true hyperplasia, and even after the application of cocaine, which will relieve any coexisting turgescence, the turbinal remains definitely enlarged. Either the middle or the inferior turbinals may be affected, and the treatment will be considered separately.

Hyperplasia of the Middle Turbinal.

In my opinion the cautery should not be applied to the diseased middle turbinal; unpleasant and even dangerous results have followed its use. The main pathological changes are: (*a*) Enlargement of the anterior end. (*b*) Cystic enlargement of the head of the bone. It is well to remember that the pressure of the enlarged turbinal on the septum or its interference with the aeration of the fronto-ethmoidal cells may cause persistent neuralgia across the bridge of the nose or in the infra- or supra-orbital regions.

* Part II., entitled Nasal Polypi and Ethmoidal Disease, will appear next week.

Anosmia and aprosexia are also fairly common symptoms. The best treatment consists in the removal of the enlarged end by the nasal snare, a proceeding which is facilitated if a deep incision behind the enlarged portion be previously made with a punch forceps such as Grunwald's. The same procedure may be used to remove cysts, but if these are friable their complete removal by the snare is often impossible, and a "mopping-up" operation with curette or forceps may be required. Glegg's nasal snare is the best. It has the following advantages: (1) The wire can be easily and rapidly threaded or unthreaded. (2) The size of the loop can be regulated *after* threading. (3) Should more than one application be necessary the loop can be pushed out without twisting.

Hyperplasia of the Inferior Turbinal.

The treatment of the hyperplastic inferior turbinal is also operative, but one must be most conservative as to the amount removed, since marked dryness or even a pseudo-atrophic rhinitis may follow the sacrifice of too great a portion. Removal of the anterior end by the snare will be facilitated if an incision with angular scissors be first made along the attachment of the turbinal to the outer nasal wall, otherwise the snare is apt to slip.

For the removal of the enlarged posterior ends a general anæsthetic is usually advisable, when a finger may be passed into the post-nasal space to guide the loop of the snare into the desired position. The other operations mentioned may be performed under local anæsthesia.

After-treatment.

My usual practice is to instil hydrogen peroxide drops t.d.s. for some three or four days, followed by the use of the nasal wash twice daily until healing is complete. The use of neb. menthol is often soothing and beneficial.

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Special Articles.

ESTIMATION OF VITAMIN A IN COD-LIVER OIL.

REPORT* ON A COMPARISON BETWEEN THE COLORIMETRIC (ROSENHEIM, DRUMMOND) AND THE BIOLOGICAL METHOD OF DETERMINING VITAMIN A IN COD-LIVER OIL.

THE work summarised in this report was organised by the Accessory Food Factors Committee at the request of Dr. H. H. Dale, Chairman of the Second International Conference (League of Nations) on the Biological Standardisation of Certain Remedies, Geneva, August–September, 1925. A subcommittee of this Conference (Dr. H. H. Dale, England; Prof. Poulsson, Norway; Prof. Voegtlin, United States) had been appointed to arrange for a special test to be made of the validity of the colorimetric method for estimation of vitamin A described by Rosenheim and Drummond [1] in comparison with the biological method.

For the purposes of this test seven samples of cod-liver oil were provided, six by Prof. Poulsson and one by Dr. Dale.

Dr. O. Rosenheim, F.R.S., consented to determine the vitamin A content of these oils by the colorimetric test, and the following four laboratories were invited to make independent tests of the same oils, using the biological method: Department of Biochemistry, University College, Prof. J. C. Drummond; Department of Pharmacology, University of Sheffield, Prof. E. Mellanby, F.R.S.; Department of Physiology, King's College for Women, Prof. V. H. Mottram; Department of Experimental Pathology, Lister Institute, Prof. Sir Charles Martin, F.R.S.

Colorimetric Test for Vitamin A Assay in Cod-liver Oils.

1. *Arsenic Chloride Method.*—The oil is measured from a Wright's capillary pipette, graduated by means of mercury to hold 25 c.mm. and delivering 20 mg. oil, into a test-tube of clear white glass of 10 mm. internal diameter. One c.cm. of the reagent (pure $AsCl_3$) is delivered from a standard 10 c.cm. burette into the test-tube and a reading taken immediately (the time limit one minute) in a Lovibond's colorimeter. The results are expressed in standard units (blue) of the colorimeter. Five consecutive tests made in each case differed on the average by $\pm$ 0·10 unit.

2. *Antimony Chloride Method.*—By means of a standard pipette 2 c.cm. of the oil are measured into a measuring flask of 10 c.cm. capacity. The pipette is rinsed out three times with chloroform, and the solution made up to volume with the same solvent; 0·2 c.cm. (=40 c.mm. oil) of the solution are measured into a test-tube (10 mm. diameter) and mixed with 2 c.cm. of a 30 per cent. antimony chloride solution in chloroform delivered from a standard burette. Readings are taken as above described. Limit of error as above.

The values obtained by the $AsCl_3$ method and its $SbCl_3$ modification agree within the limits of error of each method. The results obtained on the same oils by two independent observers agreed within $\pm$ 0·50 units—i.e., the usual difference in colorimetric work. The figures given in the table below refer to the mean of the values obtained with the arsenic chloride and antimony chloride methods respectively.

Biological Method for Vitamin A Assay.

All the workers raised the question of the exact biological method to be employed, and the Accessory Food Factors Committee was asked to give an opinion on this point.

The method for biological assay of vitamin A (anti-xerophthalmic factor) detailed in the memorandum of July, 1925, drawn up by Prof. Poulsson on behalf of the Permanent Standards Committee of the League of Nations Health Organisation, was discussed at a Conference held at the Lister Institute on Dec. 18th, 1925. The Conference was unanimous in the opinion that the method therein described was defective in that no provision was made for an adequate supply of vitamin D (antirachitic factor) to the experimental animals during the period of the test.

The following general method for the biological estimation of vitamin A in the samples of cod-liver oil was therefore recommended and adopted by the four laboratories undertaking the biological tests:—

1. Young rats of weight 40–50 g., 20–30 days old, to be used.

2. The number of control animals to be equal to that in each group receiving oil.

3. The animals to be fed on artificial diet devoid of fat-soluble vitamin until growth ceases, and excess of antirachitic vitamin (in form of irradiation, irradiated foodstuffs, or irradiated cholesterol) to be supplied during the whole or latter part of this pre-observation period.

4. The material to be tested to be added to the diet when growth has ceased and the weight of the animal has become constant or is beginning to decline.

5. The animals to be observed during a further period of four weeks, during which time the antirachitic vitamin should be supplied.

6. Comparison to be instituted between the doses of the various oils required to restore the same rate of growth.

* Report to the League of Nations Health Organisation by the Accessory Food Factors Committee (appointed jointly by the Lister Institute and the Medical Research Council).

[1] Biochemical Journal, 1925, xix., 753.

7. Not less than three animals to be used for each dose of oil. The oil to be administered separately to each animal. The diluent to be some inert solvent, whose inactivity should be controlled by the behaviour of control animals.

The results obtained by the various workers using the biological method are summarised in the accompanying table. It will be seen, however, that the observers did not in all cases find it possible to institute a comparison on the lines laid down in (6) above, and in two instances comparison was made between the *rate of growth* shown by rats *upon the same dose* of the different oils. By this method quantitative accuracy of comparison is impossible, seeing that the relation between size of dose and rate of growth has not been determined. But the oils can be graded in order of merit provided that the dose selected for making the comparison does not exceed the minimum required for normal growth.

After the results had been submitted, Dr. Dale communicated the results received from Prof. Poulsson (also included in the table), together with the following description of the various oils :—

Oil 1.—An ordinary medicinal cod-liver oil. Details of preparation not available.

Oil 194.—Raw medicinal cod-liver oil prepared by the ancient "rotting" process. The liver remains in open barrels for many weeks, sometimes for several months. This oil is very strongly coloured.

Oils 202, 97, 140, 114.—Ordinary medicinal cod-liver oils, prepared by means of steam. Nos. 97, 140, and 114 have remained in half-filled bottles for two to three years and may have undergone alterations. No. 202 is a fresher oil and has been kept in filled bottles.

Oil 82.—Cod-liver oil prepared in a very primitive way by simply boiling the cod livers in an open pot. Such cod-liver oil is employed by the inhabitants for their own use.

RELATIVE VALUES OF SAMPLES OF COD-LIVER OIL IN CONTENT OF VITAMIN A.

—	Laboratory.	Observer.	Method	Vit. D. supplied as—	Cod-Liver Oils. 1	194	202	97	140	114	82	Remarks.
1	Nat. Inst. for Med. Research.	Dr. Rosenheim.	C.	—	100	88	45	34	34	20	0	Expressed in units of blue (Lovibond), mean of values given by AsCl$_3$ and SbCl$_3$ reactions, using 1 c.cm. reagent and 20 mg. oil.
2	Univ. of Sheffield Pharmacolog. Dept.	Prof. E. Mellanby.	B.	Irradiated cholesterol.	++++	+++	++	++	++	+	0	Graded by— Comparison of doses required to restore same rate of growth; 82 has toxic properties.
3	Univ. Coll. Lond. Biochem. Dept.	Prof. J. C. Drummond.	B.	,,		++	+++	++	+	±	0	Comparison of rate of growth on 10 mg. doses.
4	King's Coll. for Women, Physiol. Dept.	Prof. Mottram and Dr. G. Hartwell.	B.	,,		+++	++	++	++	+	0	Comparison of rate of growth, general condition and, where possible, post-mortem exam. on 5 mg., 10 mg., 15 mg., and 20 mg. doses.
5	Lister Inst. Dept. of Exp. Pathology (Prof. Sir C. Martin).	Miss K. M. Soames and Miss J. Leigh Clare.	B.	Irradiated hardened cotton-seed oil.	+++	++	+++	++	++	+	±	Comparison of rate of growth on 20 mg. dose (Lister standard cod-liver oil = +++).
6	Univ. of Oslo.	Prof. Poulsson.	B.	Not supplied.		100 (0·5 to 0·75)	66 (0·75 to 1·0)	30 (2)	66 (0·5 to 1·25)	30 (2)		Comparison of smallest growth promoting dose (in mg.).

C. = Colorimetric. B. = Biological.

Results.

The grading of the seven oils for vitamin A value by the English workers using the biological test is roughly the same, but there was a marked variation in the values obtained in different laboratories for the same oil. This variation in the results among themselves was at least as great as that existing between the latter and those obtained for the same oils by the colorimetric method. It was not possible to attach numerical values to the results obtained by the biological method. The colorimetric test gave oil No. 1 the first place and placed oil 194 not far behind. Oil No. 1 was also placed in the first rank by one of the two observers who examined it using the biological method. Oil 194 was found next in value in two out of four biological tests; in the other two oil 202 was found superior to oil 194. The results of the colorimetric test and of all four biological tests agreed (1) in consigning an intermediate position to oils 97 and 140, and (2) determining oil 114 to be inferior to these two, and (3) in finding oil 82 to be either very poor in vitamin A or altogether devoid of it.

The Committee finds the biological method does not, at present, permit of sufficient accuracy for the presentation of the above results in numerical form.

Conclusion.

In the examination of cod-liver oils for vitamin A the colorimetric method of Rosenheim and Drummond afforded information consistent with that derived from the biological tests.

In recording this conclusion the Accessory Food Factors Committee, however, considers that before a conclusion is drawn as to the general validity of the colorimetric method for assay of vitamin A, tests should be made with substances containing vitamin A, other than cod-liver oil, such as butter, palm oil, cereal oils, &c.

F. GOWLAND HOPKINS, *Chairman.*
HARRIETTE CHICK, *Secretary.*

September 1st, 1927.

APPENDIX.

Basal diets (deprived of vitamin A) used for the biological tests as carried out in Laboratories 2-5.

Lab. 2 (University of Sheffield, Pharmacological Department).

Caseinogen	400 g.	Lemon juice	140 g.
Rice starch	800 g.	Salt mixture	80 g.
Cane sugar	240 g.	Liquid salt solution—	
Marmite	160 g.	$CaH_4(PO_4)_2$. 176 KI . . 10	160 c.cm.
Olive oil (heated and oxygenated at 120° C. for 12 hours)	160 g.	Water to 2000 c.cm.	
		Water	700 c.cm.

Vitamin D supplied in the latter period of the test by means of 5 mg. irradiated cholesterol administered daily to each rat.

Lab. 3 (King's College for Women, Physiological Department).

Stock diet.	†Certified "A-free" caseinogen	100 g.
	Pure potato starch	320 g.
	Salt mixture	20 g.

To 22 g. stock diet was added 2·5 c.cm. oxygenated cotton-seed oil, 25 c.cm. 5 per cent. solution of marmite, 50 c.cm. distilled water.

Vitamin D supplied during the whole period of the test by administering 2 mg. irradiated cholesterol (suspended in cotton-seed oil) daily, to each rat.

Lab. 4 (University College, London, Biochemical Department).

†Certified "A-free" caseinogen	20 g.	Salt mixture	5 g.
Rice starch	76 g.	Yeast extract (marmite)	5 g.

Vitamin D supplied as 1 mg. irradiated cholesterol dissolved in liquid paraffin administered separately to each rat daily.

† Prepared by Glaxo, Ltd.

Lab. 5 (Lister Institute, Department of Experimental Pathology).

"*F*" *Diet.*

Caseinogen	100 g.	Lemon juice ..	25 g.
Wheat starch	250 g.	Salt mixture ..	25 g.
Hardened cotton-seed oil	75 g.	Water	300 c.cm.
Yeast extract (marmite)	25 g.		

Vitamin D was supplied during the latter part of the test by previously irradiating the cotton-seed oil for 30 minutes at a distance of 33 cm. from the burner of a quartz mercury-vapour arc lamp.

In all cases the caseinogen was purified by heating for 36–72 hours in thin layers at 120° C.

The salt mixtures were all based upon No. 185 of McCollum, Simmonds, and Pitz.[2] In Laboratories 2 and 3 there were also additions of small quantities of sodium fluoride, manganese sulphate, and potassium iodide.

THE RELATIVE CONTENT OF THE FAT-SOLUBLE VITAMINS A AND D

IN A SERIES OF COD-LIVER OILS.

By JOAN LEIGH LEIGH CLARE

AND

KATHARINE MARJORIE SOAMES.

(*From the Department of Experimental Pathology, Lister Institute.*)

THE series of cod-liver oils which form the subject of this investigation was the same as that described in the Report of the Accessory Food Factors Committee on "A Comparison Between the Colorimetric and the Biological Method of Determining Vitamin A in Cod-liver Oil" (see p. 148). The same oils were examined for their content of the antirachitic vitamin D to see whether any parallelism existed between the amounts of vitamins A and D respectively contained in any one oil.

1. *Titration of Vitamin A.*

The method employed was biological and in accordance with the general description given in the Report referred to. The following details may, however, be added :—

Litters of young rats, 3 to 4 weeks old, and weighing between 30 and 40 g., were placed on the basal diet F devoid of fat-soluble vitamins.

Caseinogen	100 g.	Lemon juice	25 g.
Wheat starch	250 g.	Salt mixture* ..	25 g.
Hardened cotton-seed oil	75 g.	Water	300 c.cm.
Yeast Extract (Marmite)	25 g.		

At the end of 14 days the animals were put in separate cages and after a further period of 14 days vitamin D was given in the form of cotton-seed oil irradiated with ultra-violet rays from a mercury-vapour quartz lamp, and incorporated in the diet. The animals were maintained on the diet thus changed until growth had ceased for at least a week or a marked loss of condition or weight had occurred. The oil to be tested was then administered by pipette daily for a month, in doses of 19, 6, and 2 mg., the smaller amounts being diluted with inactivated olive oil. A group of three rats received each dose of oil. The numerical results are given in Table I., and from these was derived the approximate grading given in the table of the preceding Report.

The test on oil No. 1 was carried out in the autumn with young rats which had been born in the late summer and had not, therefore, the same growth capacity as those born earlier in the year. The average weekly increase in weight when receiving an optimum dose (19 mg. daily) of a good cod-liver oil used in this laboratory was only 5·3 g. as compared with 10·2 g. for rats born earlier in the summer.

The degree of accuracy obtainable with the biological method as thus carried out was disappointingly low. There was so great a variation in the behaviour of individual rats treated in exactly the same way that the number in each group would need to be much greater to ensure reasonable accuracy. It is impossible to deprive all animals of vitamin A to exactly the same degree in the preliminary period, and there were great differences in the individual power of response when vitamin A was administered. This was especially so when the doses of cod-liver oil were small. For this reason the results obtained with 2 mg. dose of oil have been omitted from Table I.

The data obtained do not permit a satisfactory comparison to be made *between the doses of the various oils required to restore the same degree of growth*, which is the correct method for quantitative assay of the vitamin. It would be necessary to carry out tests with doses more than three in number and less widely separated. The data given in Table I. do, however, suggest that oils 97 and 194 may be regarded as about three times as potent as oils 114 and 82 respectively although the figures are not, on the whole, consistent enough to permit of more than a rough evaluation. The oils may, however, be roughly graded by the amount of growth made on the 19 mg. doses. On this basis oils 1 and 202 may be taken as equal in value to the standard cod-liver oil; oils 194, 97, and 140 cannot be discriminated, but appear distinctly inferior to the above and superior to oil 114. Oil 82 appears to contain but traces of vitamin A.

TABLE I.—*Assay of Vitamin A.*

Effect of small daily doses of the various oils upon the average weekly weight increments of rats maintained for four weeks on "F" diet (devoid of fat-soluble vitamins) to which vitamin D was added as irradiated cotton-seed oil.

Oil.	Average weekly growth increments.		Grading of oils according to growth increments on 19 mg. dose standard cod-liver oil = 100.	Average weekly loss in weight of control rats on basal diet without addition.
	6 mg. dose daily.	19 mg. dose daily.		
	g.	g.		g.
Standard	..	5·3	..	−2·5
1	7·4	7·7	100+	..
Standard	..	10·2	..	−7·1
202	2·0	12·0	100+	..
194	2·1	7·0	69	..
97	4·1	6·4	63	..
140	− 0·8	6·7	66	..
114	− 1·8	4·3	42	..
82	−12·3	1·74	1·7	..

2. *Titration of Antirachitic Vitamin D.*

Vitamin D was assayed by three methods.

METHOD 1.—The vitamin was estimated by the increase in bone calcification occurring after small doses of the various oils had been administered to young rats upon McCollum's (1921) No. 3143 low phosphorus, rickets-producing, diet (wheat 33, maize 33, gelatin 15, wheat gluten 15, $CaCO_3$ 3 and NaCl 1 parts by weight). After three to four weeks upon this diet, if no vitamin-D-containing substance is added young rats invariably develop a degree of rickets which can be recognised histologically, while chemical analysis reveals a very low calcium content in the bones.

Young rats of about 40 g. weight received this diet for 23 days. In one control group of eight rats (negative control group) no cod-liver oil was given. In another control group of eight rats (positive control group) 19 mg. daily of the standard cod-liver oil was given. In 21 other groups containing three rats each the individuals received, respectively, 2, 6, and 19 mg. daily of the seven oils to be tested. After 23 days the rats were killed and estimation made of the ash in the fat-extracted leg-bones (femur, tibia, and fibula) after the method described by Chick, Korenchevsky and Roscoe (1926). The results are given in Table II.

McCollum's No. 3143 diet, however, while deprived of vitamin D, is also deficient in vitamin A and has a defective salt mixture, in that the content of phosphorus (0·30 per cent. P. on the dry weight) is too low both in absolute amount and also in relation to the proportion of calcium contained (1·22 per cent. Ca on the dry weight). It does not, therefore, fulfil the requirement that in the biological assay of a vitamin the basal diet should contain optimal

[2] Journal of Biological Chemistry, 1917, xxix., 341.
* No. 185, McCollum, Simmonds, and Pitz, 1917.

amounts of all essential substances except the one which is the object of study.

As a result of attempts to discover a diet for use in assay of vitamin D, which should fulfil this condition, we came to the conclusion that wheat embryo, first suggested by Miss E. M. Hume, is the best means of supplying vitamin A without furnishing more than a negligible quantity of vitamin D and preferable to hog millet or alfalfa meal, which were investigated by Steenbock, Nelson, and Black (1924).

METHOD 2.—The vitamin D content of the same cod-liver oils was assayed with the use of a diet modelled upon diet F (see above), to which 20 per cent. wheat embryo was added. The proportion of casein-ogen and wheat starch was reduced so as to leave the balance of protein and carbohydrate unchanged. On this basal diet rickets does not usually develop, but the lack of vitamin D can be detected by the lowered ash content in the bones of the experimental animals at the close of the experiment. The test was carried out as follows :—

Young rats about 23 days old weighing 35–40 g. and derived from 14 litters, were arranged in 23 groups with the two sexes and different litters as evenly represented as was possible. Twelve rats in the "negative" control group received no addition to the diet and nine rats in the "positive" control group received 19 mg. daily of the standard cod-liver oil. Each of the 21 other groups contained four rats receiving, respectively, 2, 6, and 19 mg. daily of the seven cod-liver oils. After eight weeks the rats were killed and the ash content of their bones was determined.

TABLE II.—*Antirachitic Vitamin D Content of Cod-liver Oils.*

Average percentage ash in fat-extracted dry bones of young rats receiving various daily doses of the different oils after being maintained for—

Oil No.	23 days on McCollum's 3143 diet. (Method 1.)			55 days on "F" diet containing 20% wheat embryo. (Method 2.)		
	2 mg. dose.	6 mg. dose.	19 mg. dose.	2 mg. dose.	6 mg. dose.	19 mg. dose.
1	31·8*	37·5*	41·2*	57·4	61·1	62·5
194	31·3	35·0	39·3	55·7	57·7	61·2
202	32·3	40·5	40·8	51·6	53·6	62·1
97	31·4	41·3	37·7	56·5	61·2	61·8
140	31·8	40·9	42·6	54·4	58·3	61·3
114	31·5	34·2	38·6	57·8	58·1	61·0
82	30·8	32·8	38·8	52·1	53·2	61·4
A	..	..	(40·4)	..	..	(6 3·8)
B	(27·1)	..	..	(49·5)	..	..

A = Standard cod-liver oil, "positive" control.
B = No addition of oil to diet, "negative" control.
* Positive control, 44·1 ; negative control, 25·3.

The results obtained with methods 1 and 2 are set out in Table II. In attempting to draw quantitative conclusions, however, the same difficulty arose as was encountered in the assay of vitamin A. The variation in the ash content of bones of rats upon the same ration was frequently as great as that existing between the averages calculated for rats in different groups. Nearly 200 rats were used in the attempt to assay these oils for content of vitamin D, and it is probable that two or three times this number would be necessary to enable any quantitative comparison to be instituted which should possess a reasonable degree of accuracy.

If, however, average ash content of bone be plotted against daily dose of each oil, graphs are obtained from which a rough estimate can be made of the dose which might be assumed to correspond to any definite value of the ash content of bone. This was done with the results obtained by method 2. The value selected was 57 per cent. of the dry weight of the fat-extracted bone, a value about midway between that shown by the "negative" and "positive" control rats respectively. The oils as investigated by method 2 then range themselves as shown in Table IV.

METHOD 3. *Assay of Vitamin D by Increase in Body-weight.*—Steenbock and his collaborators (1923, *a*, *b*) were the first to insist that, as is the case with other vitamins, the presence of the antirachitic vitamin D in the diet was essential for normal growth of the young rat. They have also used increase in weight as a criterion for the detection of vitamin D. The experimental animals must, however, be maintained on a diet otherwise complete and including, of course, an adequate provision of vitamin A. The growth made by the rats used in method 2 has, therefore, been studied with this view and the results are collected in Table III.

Here, again, the variation shown by individual rats in the same group was sometimes found to be as great as that occurring between the averages calculated for the different groups. In the main, however, the results which are summarised in Table IV. may be said to agree with those derived from analysis of the bones.

TABLE III.

Vitamin D in cod-liver oils (method 3). Average weekly increase in weight (in grammes) of young rats maintained for eight weeks on Diet "F" containing 20 per cent. of wheat embryo with supplementary doses of cod-liver oil.

Oil.	Dose given daily—		
	2 mg.	6 mg.	19 mg.
Standard* ..	..	..	17·2
1	13·2	16·8	19·3
202	8·6	9·9	15·8
194	11·4	14·2	15·8
97	12·4	15·5	18·1
140	10·1	13·1	17·4
114	9·8	12·6	17·0
82	8·1	9·1	14·8

* Positive control rats. Negative control rats, 7·3.

Comparison of Table IV. with Table I. shows that no correlation exists between the vitamin A content and the antirachitic value of this series of cod-liver oils. Oils 82 and 1 are the poorest and best oils respectively as regards both vitamins. Oil 202, however, which was equal to oil No. 1 in vitamin A content, is only equal to oil 82 in antirachitic value, and oil 114, which was definitely inferior to oils 194 and 140 in vitamin A content, is found to be their equal in antirachitic value.

TABLE IV.—*Antirachitic Value of Cod-liver Oils. Criterion.*

Daily dose required to raise the ash content of fat-extracted bones from 49·5 per cent. (negative control rats) to 57 per cent. (Method 2.)				Daily dose required to maintain growth of approximately 12 g. weekly. (Method 3.)			
Oil.	Dose mg.	Oil.	Dose mg.	Oil.	Dose mg.	Oil.	Dose mg.
1	2	82	11–12	1	2	82	13
97	3	202		97	2	202	15
194	5	—	—	194	3	—	—
114				114	4	—	—
140				140	6	—	—

Conclusion.

The experiments described in this paper have demonstrated how small is the degree of accuracy which it would seem possible to attain with the biological methods at present available for assay of vitamins A and D, unless a prohibitive number of animals is used. Notwithstanding this drawback the results leave no doubt in our minds that the content of vitamin A in cod-liver oil bears no necessary relationship to that of vitamin D.

This lack of parallelism between the content of these vitamins may be explained, in part, by the fact that vitamin A is less stable than vitamin D and, therefore, more likely to be affected adversely by methods of preparation and storage which involve heat and oxidation. Oil 202, one of the oils poorest in vitamin D, while richest in vitamin A, was also one of the freshest of the oils and had been kept in filled bottles (see report, p. 148).

The medicinal worth of cod-liver oil depends more upon its antirachitic value than upon its content of vitamin A, for the latter is readily and more conveniently obtained from foodstuffs. If the amount of one of these vitamins in a particular oil bears no necessary relationship to the other, as from our experiments we believe to be the case, the biological method of testing cod-liver oil laid down in the United States Pharmacopœia, which aims at the assay of vitamin A only, is open to criticism.

We have much pleasure in thanking Sir Charles Martin and Dr. Harriette Chick for suggesting this research and for the large measure of help and advice given to us by them throughout the experiment, and in thanking also Dr. H. H. Dale, of the National Institute for Medical Research, for supplying the samples of cod-liver oil. We have also to acknowledge our indebtedness to the Medical Research Council for a whole-time grant and to the Lister Institute for the hospitality of its laboratories.

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MEDICINE AND THE LAW.

Fishing Vessels and Dangerous Drugs.

THE Dangerous Drugs Act Regulations of 1921 dealt specially with the case of ships not carrying a duly qualified medical practitioner. The Regulations recognised the master of the ship as a person authorised to be in possession of drugs so far as necessary for complying with the requirements of the Merchant Shipping Acts. The master was allowed, subject to conditions prescribed by the Home Office, to administer and supply the drugs to any member of the crew in accordance with instructions prepared or sanctioned by the Board of Trade. In August, 1921, the Home Office granted an authority to skippers of British fishing vessels to be in possession of tinctura chloroformi et morphinæ composita and tinctura opii. That authority has been revoked by the Home Office as from the beginning of the present year. It is replaced by an authority, dated Dec. 30th last, granting the owner of a British steam fishing vessel registered under the Merchant Shipping Acts formal permission to be in possession (for first-aid purposes and for treating injuries to the eye) of a preparation containing cocaine. The preparation consists of cocaine in castor oil with mercuric chloride in the proportion of not more than 1 part in 200 of cocaine and not less than 1 part in 3000 of mercuric chloride. The preparation must be kept under lock and key at the owner's office or place of business; it must be obtained only in quantities sufficient for the vessels concerned, and it must be used for this purpose and no other. Written records must be kept and produced for inspection when required. This new authority by the Home Office has to be read with the Board of Trade notice (No. 90) of August last which prescribed scales of medicines and medical stores for steam fishing vessels absent from the United Kingdom for four days or more. The scales included a first-aid case containing inter alia one ½-ounce bottle of cocaine eye-drops. Under the Dangerous Drugs Regulations the skipper of a fishing vessel to which the Board of Trade scales apply had authority to purchase the necessary supplies of eye-drops. It was found, however, that it is usually the owner or manager who purchases the medical stores, and not the skipper. The recently issued authority is intended to meet this difficulty. "Owner" is defined to mean the registered owner of the vessel or, where a managing owner or manager is appointed, the managing owner or manager.

CANCER OF THE RECTUM.

TREATMENT AND ITS RESULTS.

THE latest report [1] issued by the Ministry of Health is based on the examination of nearly 6000 cases of rectal cancer in which operations for radical cure were performed. The data were collected from ten different countries and the inquiry was conducted by the Departmental Committee on Cancer,[2] which specially acknowledges the assistance given by Dr. F. J. Darbyshire, who examined and abstracted the literature, by the Surgical Statistics Subcommittee, and by Dr. Janet Lane-Claypon and Prof. Major Greenwood. The report covers 70 pages and is a sequel to those on cancer of the breast and uterus [3] which have at various times been summarised in our columns.[4] The principal facts elicited and conclusions reached are as follows.

Operability.

Even now there are no general accepted criteria of operability, each surgeon being guided largely by his personal experience and the type of operation which he practises. Fixation of the rectum, for instance, is regarded by some as the chief contra-indication to operation, the height of the growth being of minor importance, whilst others consider that fixation may be due entirely to inflammatory changes, as is shown, they claim, by the restoration of mobility after colostomy. Information as to operability is given in 5231 of the cases whose records have been examined. When these are grouped under countries of origin the operability varies from 35 to 67 per cent., with a mean for the whole series of 48·5 per cent. It should be remembered that some of the data used in reaching these figures are more than 50 years old.

There seems to be general agreement that the mean operability is higher for women than for men, owing, it is said, to the greater roominess of the female pelvis and its superior resistance to infection. This opinion is borne out by the available information, which is, however, "very limited."

Operative Mortality.

For the purposes of the inquiry deaths have been considered "operative deaths" if they are so described by the author, or (in the absence of any such statement) if they occur within one month of operation. On this basis the operative mortality for 5240 cases of radical operation is shown to be 16·5 per cent. The mortality for 860 males was 18·9 per cent., whilst for 538 females it was only 15·0. The operative mortality (both sexes together) is found to be heaviest (32·0 per cent.) in the case of the combined operation and lightest (15·4 per cent.) in the case of the sacral operation, the perineal operation being intermediate (17·4 per cent.). When the two sexes are considered separately the above order holds good for males, but the lowest operative mortality for females belongs to the perineal rather than the sacral operation.

In view of the difficulties of definition it was decided that growths of the pelvic colon and rectum proper should be considered together. A classification according to position was adopted, the tumours being grouped according to distance from the anal margin. The three groups correspond approximately to anatomical segments of the gut. The first group described as "low," refers to the area lying within 1½ in. of the anal margin—i.e., in general the anu

[1] Ministry of Health: Reports on Public Health and Medical Subjects, No. 46. H.M. Stationery Office. 1*s.* 6*d.* net.
[2] The Committee consists of Sir George Newman (chairman), Mr. C. J. Bond, Sir George Buchanan, Dr. S. Monckton Copeman, F.R.S., Prof. Major Greenwood, Sir Gowland Hopkins, F.R.S., Prof. W. S. Lazarus-Barlow, Dr. J. A. Murray, F.R.S., Dr. T. H. C. Stevenson, Dr. Stanley Wyard, and Lieut.-Colonel A. B. Smallman, M.D. (secretary). Additional members for the Surgical Statistics Subcommittee are Sir Gilbert Barling, Dr. T. Watts Eden, and Mr. E. W. Miles.
[3] Reports on Public Health and Medical Subjects, Nos. 28, 32, 33, 34, and 40.
[4] THE LANCET, 1924, ii., 708; 1926, i., 618; 1926, ii., 184, 611, and 672; and 1927, ii., 288.

and anal canal; the second "middle," refers to that between 1½ in. and 4½ in. of the anus, and therefore takes in the ampulla and anything within reach of the examining finger; whilst the third group, "high," comprises those more than 4½ in. from the anal margin, including the rectosigmoidal junction. These terms refer to the lower margin of the tumour. The following table for 1769 cases shows that the higher the growth the higher the operative mortality:—

Site of Growth.	Total No. of cases.	Percentage at this site.	Died from operation.	Operative mortality.
Low ..	550	31·09	67	12·28
Middle ..	1004	56·76	168	16·79
High ..	215	12·15	55	25·50

Data relating the stage of the disease to the operative mortality are given by one surgeon only, but tend to show that the operative mortality is higher for cases in an advanced stage of the disease. Of the immediate causes of operative death "sepsis" is found to be much the most important, being responsible for nearly half the deaths from operation. "Shock and collapse," the next cause in order of importance, accounts for a little more than half the deaths due to "sepsis."

Fate of Patients Submitted to Radical Operation.

For the purpose of this estimation it was decided to reject all patients who had been operated upon before 1890. Of 2344 other patients about whom the necessary information is available, 39·9 per cent. are estimated as having been alive three years after operation. The percentage varied in different countries from 26·9 to 51·4.

The results of the perineal and sacral operations are found to be practically the same up to the end of the second year, but after that the perineal operation has an advantage over the sacral. Females are found to do much better after the perineal operation than after the sacral. The figures for the combined operation are too small to allow of any definite deductions. The prospects of survival are better for females than for males at all periods after radical operation.

Analysis of 2543 cases submitted to radical operation during the past 50 to 60 years shows that the average number of years lived per patient up to the end of five years after operation was 2·53. On the other hand, it has been estimated that the corresponding figure for the untreated patient is 1·59 years, so that on the average radical operation prolongs the life of a patient by 0·9 year (for patients dying within five years). These figures are less favourable than the reality because they leave out of account the number of years still to be lived by those who survive for more than five years.

Symptoms.

Much the commonest first indications of cancer of the rectum are irregularity of stool, pain (not at stool), and blood in the motions, in the order named. These three signs and symptoms taken together account for 84·5 per cent. of the 1244 cases for which this information is given. Of the later indications of the disease, irregularity of stool, blood in the motions, and pain are found to be the commonest, in the order named, and account for 64·5 per cent. of the 3828 cases for which this information is given.

This clearly shows the great importance of carrying out a thorough examination at the first opportunity of all patients—or, at any rate, of those over 30 years of age—suffering from blood or pain at stool, constipation or diarrhœa, or pain in the anal canal, rectum, perineum, sacrum, or abdomen, in order to detect or exclude the presence of cancer of the rectum. The fact that cancer of the rectum, like cancer at other sites, has no peculiar symptoms or signs, undoubtedly adds to the difficulty of diagnosis, but it does not in any way absolve the patient's medical attendant from the duty of carrying out a thorough examination at the earliest possible moment if any of the chief early indications are present. The statement often made that cancer of the rectum is a painless disease, at any rate in its earlier stages, is in direct opposition to the evidence.

Summary.

In his preface to the report Sir George Newman summarises the principal findings as follows:—

(*a*) On the average a period of 12 months was allowed to elapse between the occurrence of the first symptom of the disease and the patient coming to operation. (*b*) Rather less than half the cases when seen by the surgeons were considered to be operable. (*c*) About a sixth of all the patients who underwent a radical operation died as the result of such operation or from causes connected with it. There is no doubt, however, that it should be possible to secure a considerably lower operative mortality at the present time. (*d*) There is evidence, though limited, to show that the mortality from operation was much higher than the average among those patients who are in an advanced stage of the disease. (*e*) Two out of every five of those submitted to radical operation were alive three years afterwards. He points out that no evidence has been forthcoming to ratify the common belief that rectal cancer is of graver import in young persons than in older ones and draws special attention to the fact that, with the exception of irregularity of the bowels, pain is the commonest first indication.

VIENNA.

(FROM OUR OWN CORRESPONDENT.)

Austrian Health Statistics.

AT one of the recent sittings of the National Assembly the chief of the Austrian Board of Health gave some interesting facts and figures about insurance and the public health. The number of persons insured against illness under the Working Men's Insurance Act was, he said, over 1,000,000, whilst 200,000 more were covered by the Shop and Trade Assistants Act. The number of the insured members of the civil services was 170,000; the railway servants and officials insured against sickness numbered 150,000, and there were also 180,000 labourers and officials insured in agricultural sick clubs. Altogether, 1,700,000 persons were thus under the control of public *Krankenkassa*, or national insurance. Adding to this figure the number of dependants (members of family who enjoy the benefits of the insurance of the chief of the household) it appears that at least 3,500,000, or 55 per cent., of the total population of this Republic are receiving medical aid under one or other form of insurance and are thus lost to the private practitioner (which explains the constant unsettled condition of the profession). The annual expenditure on this welfare care amounts to about £6,000,000 for the labourers, and nearly £3,000,000 for the trade assistants, employers and employed contributing in equal proportions.

Last year proved fairly free from serious epidemics of contagious or transmissible diseases, and no case or cholera, typhus, or small-pox has been imported into this country; diphtheria has rather increased (from 3755 cases in 1926 to 5051 in 1927), and so has scarlet fever, but both have taken for the most part a rather mild course. The number of typhoid cases is constantly decreasing, and the hope is justified that with improvement of the water-supply it will diminish still further. Trachoma is endemic in the south-eastern province of Austria, which has been taken over from Hungary, and the progress of public health in this region is very slow and difficult, owing to the low standard of living of the population. The number of cases of acute poliomyelitis, which was rife last year in the Balkans and also in Central Europe, has fortunately not risen above 130, so that there is and was no need for anxiety. As regards venereal diseases, the figures of the hospitals show a constant decline. In 1925, the total number of patients treated in the State hospitals for venereal

diseases was 6246 for syphilis and 6028 other sexual diseases, whereas in 1926 the numbers were 5706 syphilitic and 5747 other cases. Incidentally, it may be mentioned that in 1925 the number of prostitutes controlled by the police in Vienna was 1097, and in 1926 only 1014. A considerable increase in the consumption of alcoholic beverages has been noted in the past year, especially of heavy beer and cognac. The reports of the Ministry of Agriculture and the Customs Board also show that large quantities of heavy wines have been imported, and the police officers have dealt with over 16,000 persons found drunk in Vienna alone, of whom over 2 per cent. were juveniles.

The war has left us a sad inheritance; there are 53,259 war invalids besides 31,864 war widows, 69,593 orphans, and 24,192 dependants of men who died in action or from war diseases. All these persons are receiving pensions.

Tetanus.

Dr. O. Hock has recently published a short paper on work done in the accident ward of the first surgical clinic of the University of Vienna, which is directed by Prof. Eiselsberg. He deals chiefly with the cases of tetanus, of which only 25 have been observed during the last 20 years. Nine of these proved fatal, four of the patients being admitted with fulminating signs of the disease, and dying from 24–56 hours after the first symptoms developed. In all these cases there had been very extensive destruction of the soft tissues after severe injuries, and post-mortem no other lesion was found except a hyperæmic condition of the brain. In the other five cases, however, pneumonic and cardiac changes were observed. All the patients, with one exception (in which only the masseteric muscles were affected), suffered from severe general tetanus with trismus, opisthotonus, and spasms of the diaphragm and other muscles. The treatment given always includes injections of at least 100 units of tetanus antitoxin daily, given by subcutaneous, intravenous, or intraspinal injection, followed by chloral hydrate per rectum. Injections of morphia or pantopon are given freely, and novocaine is injected into the masseters if trismus is present. Absolute rest in a dark room is required. Every patient with an injury suggestive of tetanus receives an injection of 20 units of antitoxin as a prophylactic measure; this is sufficient either to prevent the disease from developing or to make its course very mild. This prophylactic dose was employed in 1300 out of 4655 cases of accident treated last year, and tetanus developed in only four of them. The sole drawback to its use is a disagreeable itching, occurring in some cases a few days after the injection together with a serum rash.

Diagnosis and Prognosis of Syphilis of the Aorta.

The problem presented by aortic syphilis in large cities was discussed by Prof. H. Schlesinger at a meeting of the Vienna Medical Society a short time ago. It is a mistake, he said, to judge of the influence and frequency of syphilis from the figures obtained in the post-mortem rooms for these are very misleading and give only the minimal figure. In a series of necropsies in Germany, for instance, undoubted syphilitic changes were found in only 2·5 to 5·5 per cent. of the bodies, whereas clinical investigation of large numbers of patients proved that in the later age-periods from 10 to 15 per cent. had been infected. Prof. Schlesinger finds that 14 per cent. of the patients in his wards have syphilis, the males being more often affected than the females, and he thinks that 10 per cent. of the Vienna population suffers from the disease in a recent or chronic form. The Wassermann reaction, he says, only gives a positive answer in 75 per cent. of cases and a negative result does not denote absence of infection. Of late years cutaneous manifestations have been much less common and the organism more often affects the central nervous system and the circulation. Intensive treatment seems to be responsible for the change; it diminishes the interval between infection and the manifestation of aortic disease, and in the last 20 years statistics of necropsies show a rapid increase of aortitis, which is now by far the most common form of luetic disease of the internal organs. Diagnosis is generally easy, unless severe atheroma is also present; prognosis is better than is usually supposed, especially in aortitis supracoronaria, and sometimes the condition is actually benign especially when it is accompanied by neurosyphilis. Many patients have hardly any symptoms for years, but the condition is always dangerous, as over half the affected persons ultimately die from the effects of the aortic changes. Antiluetic treatment improves the prognosis slightly, and good effects are seen in aortalgia, and in stenocardia; aortic aneurysm is often well controlled for a long while. Mild treatment, said Prof. Schlesinger, is better than intensive, and not more than 3·5 g. of neosalvarsan should be given in the course of treatment. Failing cure, it is often possible to ensure quiescence of the pathological processes in the blood-vessels.

Public Health Services.

COÖRDINATION OF THE PUBLIC HEALTH SERVICES.

In the counties of Essex, Hampshire, Gloucester, and West Sussex an assistant of the county medical officer acts also as medical officer of health for one or more local sanitary areas in the county. Dr. James Pearse has investigated for the Ministry of Health how this arrangement is working, and has come to the following conclusions[1]: 1. The local authorities within the districts investigated have almost unanimously expressed their satisfaction with the scheme, and approval has been especially marked from authorities zealous in public health activity. 2. In no district have difficulties been experienced from the dual relationship of the medical officer to the district councils and the county council. Some authorities have expressed the view that there is advantage in the liaison effected. 3. The making of a combined appointment reduces the number of officials working in a given area, increases the opportunities for efficient work in each of the appointments combined, and reduces the difficulty sometimes met by members of the general public who may need official assistance, but may not know where to find it. 4. An officer holding a combined appointment has the advantage of a wider outlook and larger range of official interests, and in particular the independence proper to a medical officer of health relieves in this respect the monotony and the less responsible work of the assistant to a county medical officer. 5. The public health services must benefit by improvement of the opportunities thus offered to new recruits. 6. The definite advantages of the system are such as to merit its continued encouragement, and the taking of such steps as may be necessary to prepare for its further and more uniform development.

THE REGISTRAR-GENERAL'S WEEKLY RETURN.

We have made a practice of calling attention to this useful publication for some time past at the beginning of every year. The first Weekly Return for 1928 does not contain any startling innovations of type or arrangement, but it does include on p. 3 a new and useful feature in the table of comparative death-rates in the eight largest towns for each of the four weeks previous to publication. A further useful addition is the inclusion in Table 5 of the number of live births and of stillbirths occurring in London during each week of the preceding quarter; this table, too, with

[1] Report No. 45 on Public Health and Medical Subjects. H.M. Stationery Office. 1928. 6*d*.

a little compression now allows room for two columns, one of which gives the total cases and total deaths from important infectious diseases during the year as far as it is already completed, with the corresponding figures for last year. The Weekly Return is, of course, supplied to sanitary authorities and their medical staff, but there must be many practitioners who would find it useful to keep it at hand for reference, if only for the reason that their lay friends are making increasing use of the information which it contains. The price is 6*d*. net per issue, from H.M. Stationery Office.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED JAN. 7TH, 1928.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 275 (last week 247); scarlet fever, 1715; diphtheria, 1376; enteric fever, 53; pneumonia, 2252; puerperal fever, 44; puerperal pyrexia, 104; cerebro-spinal fever, 12; acute poliomyelitis, 8; acute polio-encephalitis, 2; encephalitis lethargica, 31, dysentery, 10; ophthalmia neonatorum, 98. There was no case of cholera, plague, or typhus fever notified during the week.

The cases of small-pox were notified from 16 counties—viz., Berks 1 (Reading), Derby 11, Durham 35, Isle of Ely 5 (North Witchford R.D.), Lancaster 33, Lincoln, parts of Lindsey 3, Northumberland 11, Nottingham 15, Stafford 3 (Stoke-on-Trent), Sussex West 13 (East Preston R.D.), Warwick 10, Yorks N. Riding 14, W. Riding 43, Brecknock 8, Glamorgan 15, Monmouth 55.

In Sussex the original source of infection is stated to have been the East Preston Poor-law Institution (in which union Worthing is situated), which has been closed in consequence. It is not known where the man who introduced the infection into the county contracted the disease, but at least one other case has been notified in another part of the county. This was one of three casuals who went to Horsham from Brighton and entered the Steyning Poor-law Institution at Shoreham. Here there were 13 casuals, 7 of whom were vaccinated; the other 6 (including the 2 from Brighton) refused to be vaccinated, and these 2 who have been detained also refused to have their clothes disinfected. The men have been isolated and the casual ward closed. Local authorities in Sussex are actively coöperating in preventive measures.

Since then a case of small-pox has been reported from the Edmonton Poor-law Institution.

Deaths.—In the aggregate of great towns, including London, there was one death from small-pox, 5 (2) from enteric fever, 107 (44) from measles, 4 (1) from scarlet fever, 32 (8) from whooping-cough, 68 (18) from diphtheria, 61 (8) from diarrhœa and enteritis under two years, and 155 (30) from influenza. The figures in parentheses are those for London itself. Of the 63 fatal cases of measles outside London 14 were reported from Bristol, 5 from Derby, 14 from Manchester, 3 each from Salford and Plymouth, while the figures from Glasgow and Dublin for the same week were 40 and 18 respectively. The deaths from enteric fever outside London occurred in Reading, Norwich, and Chester, one each. The death from small-pox occurred in a poor-law institution just outside the Bradford county borough boundary. The number of stillbirths registered during the week was 277 in the great towns, including 46 in London.

BRIGHTON HOSPITALS AND RATES.—The revaluation of the borough is viewed with considerable alarm by the governors of the hospitals in Brighton. These institutions have hitherto been rated at a purely nominal figure, but now under the revaluation scheme startling increases have been proposed. The assessment of the Sussex County Hospital—the largest in the town—is to be increased from £64 to £3375, a rise of 5000 per cent., and other hospitals are similarly affected. It is not yet clear how the situation will be met. The Brighton figures have been forwarded to the Government Central Valuation Committee, a body which is collecting information about the practices hitherto adopted in various areas in regard to the assessing of hospitals and kindred institutions.

Correspondence.

"Audi alteram partem."

COMMISSIONS IN THE R.A.M.C.

To the Editor of THE LANCET.

SIR,—Major W. E. Home called attention in your last issue to the fact that the list of applications for commissions in the R.A.M.C. closes on Jan. 20th. Although the primary object of the Medical Service is to furnish the army with medical officers for carrying out the various duties in connexion with it, yet, after the South African War, chiefly through the energetic influence of Sir Alfred Keogh, a further and special duty for the education and training of the entrant was thrown upon the Medical Service, and the R.A.M.C. was established. That addition, involving a great change, would not have proved beneficial had it not been attended with facilities for keeping abreast of the work done in medical science in civil life and for carrying on a constant and never-ceasing inquiry into conditions and disease that either are not or are but ill-understood. In the R.A.M.C. that has been attained. I observe some signs that that standard will not, in future, be maintained owing to the reduction in the personnel to a number that is uneconomic, and to the pressure of political circumstances the moment it is realised the educational organisation might be abolished. And unless the service as it is attracts the good if not the best men turned out of the medical schools there will be no excuse for the maintenance of the present educational organisation the like of which there is none.

Indeed, the organisation is magnificent, but the scope for employment after the training is far too narrow, with the result that stagnation occurs. The initial training is unique; the opportunities for seeking new knowledge, for gaining incomparable experience in diverse directions, for leisure to deliberate over work done and that to be done are almost beyond the conception and belief of the medical student. Would-be entrants are, however, few, and there is no competition for places.

This result seemed to me, a few years ago, inevitable. It may well be asked who is there better fitted for hospital appointments, for the public health services, for many other than strict medical duties under several Government departments overseas as a well-trained officer of tne R.A.M.C.? Yet, for the trained there are but few channels at present open for him to enter in which there is a prospect of employment of a permanent nature. There are indeed openings in many directions beyond the services for the army in times of peace for which the R.A.M.C. officer is eminently suited and qualified; and it is even now a great loss to the State that his services are not in demand, and early in his career.

I am convinced more extensive use should be made of the great and valuable educational organisation built in relation to the R.A.M.C. than is possible under present conditions. Unless this organisation can be fully utilised I fear that before long the cry for economy will affect it. Scrapping would be calamitous and end in the destruction of an instrument by means of which all medical officers for State services should be trained as a condition of entry for permanent employment under usual conditions. The State needs this additional organisation attached to the R.A.M.C., so that the doctors who desire to enter any of the State services shall have opportunities to fit them for the work that would fall to their lot at home as well as overseas.

The greatest attraction of all would, I believe, be a prospect of permanent employment which none but the State can find, organise, and utilise to advantage.

I am, Sir, yours faithfully,

JOSEPH GRIFFITHS,
Colonel, R.A.M.C.

Cambridge, Jan. 14th, 1928.

THE PRESENT POSITION OF THE VOLUNTARY HOSPITAL.

To the Editor of THE LANCET.

SIR,—In reply to the numerous critics who have written in opposition to the views expressed in my address which you published on Dec. 17th, 1927, I would point out that the thesis which I was supporting was that the voluntary system of management of hospitals, because of its present well-established position and success, was preferable to any other system of management. I would emphasise the word "management," because I consider that is the keynote of the whole question; how large a measure of their funds is derived from voluntary contributions is of less importance, as long as their management remains voluntary.

In answer to Prof. Berry, I would point out to him that my statement to which he objects, that the alternative to the voluntary system of management is bureaucratic control, is in fact correct. For our country that is the precise alternative which is being actively pressed at the present moment. The support of the voluntary system is for this reason of paramount importance, as constituting the only competing system actually in being, and exhibiting sufficient strength (I believe) ultimately to prevail against that formidable bureaucratic menace. Prof. Berry is really upon my side, for he and I both find bureaucratic control "detestable." We differ only in the measures which should be adopted to prevent the extension of that "detestable" control in this country. Like Prof. Berry, I have some first-hand knowledge of American and Canadian hospitals, but my knowledge is not so recent as his. The one instance of somewhat superfluous antisepsis which I quoted was vouched for by a famous Canadian surgeon who named the hospital and obviously described what he had seen. But I readily admit that this instance could not be now regarded as typical of American hospitals.

Those of my critics who make it a reproach to the voluntary hospitals that "they cannot deal with more than 20 per cent. of the work which comes to them" do not seem to realise that the congestion which explains such a position is largely due to the enormously increased popularity, as compared with other institutions, of the voluntary hospitals; they have long waiting-lists, while there are hundreds of permanently empty beds in the poor-law infirmaries. The attitude of these critics reminds me of an incident which others will recall as well as myself. In 1913 the Senate of the University of London invited Prof. Delbruck, of Berlin, to give two lectures in London upon military history. At the conclusion of the second lecture the then Vice-Chancellor invited the lecturer and some half-dozen members of the Senate, of whom I was one, to an impromptu dinner at a club. In the course of after-dinner conversation Delbruck commented with extreme bitterness upon the relative prosperity of the British, as compared with the German, colonies in Africa, and he ascribed the inferiority of the latter to the poorness of the territory which Germany had acquired as compared with England. The German colonies, he said, were relatively empty of colonists. I ventured to suggest, speaking from personal experience, that this was perhaps due to the fact that even Germans did not always like autocratic German rule, and that I myself knew many Germans who had migrated from German South-West Africa to British South Africa to settle there. The remark produced an explosion of wrath from Delbruck. Thumping the table with his fist he said, "I know that, but it is for the good of the Fatherland that Germans remain in German territory and they *shall* like it." We remain a relatively free country, not yet entirely at the mercy of our bureaucrats, and at present there is no means of compelling patients to enter poor-law hospitals when they prefer to wait their turn for admission at the voluntary hospitals. The remedy surely would be to provide more accommodation at the hospitals where admission is eagerly desired than to seek to enlarge the accommodation at hospitals in which there are already vast numbers of empty beds which cannot be filled.

The only specific accusation in Mr. Mort's letter which seems to call for reply is that I have "described a condition in a small area of London and from that erroneously generalised for the whole of the country." My address, however, in its opening paragraphs, gave chapter and verse for the conclusions which two Parliamentary committees, after taking much evidence deliberately formulated—viz., "that the voluntary system should be maintained." I invite Mr. Mort to refer to my paper again and to look up the references I gave there of the evidence in support of that thesis, which was also mine, evidence derived from all over the British Isles.

I remain an impenitent believer in the value of tradition and experience. I will say without hesitation that I am convinced there *is* a larger measure of "humanity and the spirit of service" to be found in the average voluntary hospital than in the average poor-law institution. Again, if I understand aright an obscurely worded question addressed to me by Mr. Mort, I would answer that if I had appendicitis myself, I would rather be operated upon, let us say, in St. Bartholomew's—the oldest of the voluntary hospitals—than, let us say, in the North Middlesex Hospital. That prejudice would, I think, be shared by many. Perhaps Mr. Mort might read with profit, and a certain chastening, the tragic story of an operation for appendicitis in Sir Frederick Treves's book, "The Elephant Man."

Dr. Watson makes a suggestion of "a combination between the poor-law and general hospitals." This is, in fact, partly embodied in a scheme sketched by Mr. Walter Spencer and myself in two articles that appeared in the *Times* of Jan. 10th and 11th upon which the editor of that paper in a leading article makes the comment "such a scheme seems to be peculiarly well suited to the existing state of affairs in the hospital world." The same leading article has the following summing up in support of the thesis I have been maintaining: "The voluntary hospitals have reached their present condition of efficiency as a result of prolonged effort and by way of countless trials and stresses. Most of them are the product of centuries of evolution. They embody great traditions and possess stores of experience of which all those who serve them become the inheritors. These traditions and this experience are treasures of inestimable worth. . . . Such a hospital service as this country possesses could not be reproduced by any conceivable effort of public authorities or expenditure of public money."—I am, Sir, yours faithfully,

E. GRAHAM LITTLE.

Wimpole-street, W., Jan. 14th, 1928.

NOMENCLATURE OF DISEASE.

To the Editor of THE LANCET.

SIR,—In an annotation in your issue of Dec. 24th, 1927 (p. 1355) an important suggestion appears to the effect that an attempt should be made by an authoritative committee to define names of disease and other medical terms in everyday use. I advocated this several years ago when writing of "tuberculous pus," after an inquiry from various authorities had revealed a widely differing conception as to what was meant by the word "pus." Like sciatica, rheumatism, and many other terms "pus" is a word hallowed by time, dating from a period when pathological conceptions were inexact, and for that reason its meaning still remains inexact. It should not be difficult to form such a nomenclature committee, not from one medical body, but from those mainly concerned, on the lines perhaps of the Joint Tuberculosis Council and similar organisations. It only needs someone to take the initiative. I am, Sir, yours faithfully,

Paignton, Jan. 5th, 1928. E. WARD.

GASTRO-DUODENAL ULCERATION.

To the Editor of THE LANCET.

SIR,—The letters of Dr. Ryle and of Drs. Izod Bennett and Moncrieff in your issue of Jan. 14th afford a welcome confirmation of the valuable effects of intensive alkaline treatment. These authorities, however, seem to have mistaken to some extent the purpose and scope of our article. Alkalis and basic products have been used at some time or other by several generations of medical men and often in intense doses. Since Kussmaul and Fleixner in 1893 introduced the use of large doses of bismuth compounds amounting to 20 g. or more per day, the literature contains many claims as to the efficacy of this treatment. The method is still successfully used on the continent, and, in our opinion, the good results undoubtedly obtained in many cases depend on the action of the massive dose of bismuth on the gastric secretion. In America Sippy's excellent work further extended this use of basic substances, but no single man can claim to have introduced the method. For years past the use of large doses of alkali has been so definitely recognised as a general principle by many experts on gastric work that we felt that the time to point this out was long past. Our article in no way claimed any originality for the use of alkali in large or small doses for the treatment of stomach diseases. Such a claim at this time of day would be absurd. We do claim to have presented some definite evidence that the *majority of uncomplicated gastric and duodenal ulcers can be treated successfully by giving sufficient alkali to control the injurious effects of the gastric secretion.* This is not generally known, at least in this country. The article was meant for the general practitioner and not for the expert. Its purpose was to help the medical man who is often sorely perplexed to know what to do in these cases.

Dr. Ryle objects to the "assumption" that the ulcer is "cured." Well, we need not quarrel about terms. If a patient who has suffered agonies for several years obtains complete relief which lasts for four or five years, and perhaps indefinitely, and if at the same time radiograms show that his ulcer had healed and still remains healed, then may we not term the result a cure? One of us was unfortunate enough to suffer from a duodenal ulcer from 1908 to 1914. Diet and other methods of treatment proved unsatisfactory and the condition became almost unbearable. In 1914 the use of excessive doses of sodium bicarbonate and bismuth carbonate taken for several weeks gave entire relief from symptoms. This good result has continued, and with the exception of a few comparatively mild attacks of discomfort during 1915, which were quickly relieved by alkali, no symptoms of any importance have been present since that time. Are we not justified in calling this a cure? It is generally acknowledged that there is a special tendency or "diathesis" in the constitution of the subject who develops gastric ulceration, but our experience points to the conclusion that the judicious and timely use of alkali in sufficient dosage will prevent recurrences in the majority of patients. If an ulcer of the leg disappears may we not say that it is *cured* even if at some future time an ulcer appears on the other leg? We do not say that alkali will cure the *tendency* to gastric ulceration. We think that we are justified in claiming that many stomach ulcers are cured, but we do not wish in any way to press the point as long as our meaning is clearly understood.

The second "assumption" to which Dr. Ryle objects is our statement that the effects of the treatment are to be attributed to the alkali. We have tried the usual dietetic and other methods of treatment, and in our hands the results obtained are not to be compared with those following the use of alkali. Though the point is difficult, or perhaps impossible, to prove, yet all the available evidence points to the use of alkali as the most effective means at our disposal for the healing of ulcers. Many patients who had been receiving various kinds of treatment for years without much success have yielded to the intensive alkaline method in a few weeks. Dr. Ryle's statement on pyloric stenosis is not in accord with our experience.

Another "assumption" we have made is to the effect that acidity can be easily controlled by alkali in the majority of cases. On this point we possess ample evidence which we hope to publish later. We do not claim that it is always easy to control acidity, but that it is by no means difficult to do so to a sufficient extent in the average patient. Dr. Ryle thinks it important that in matters of this kind our conclusions should be based on sound and well-weighed evidence. We claim that our evidence is both sound and well weighed. Our conclusions are based on our experimental results and we have taken the greatest care to ensure that these results are reliable. We agree that results and findings may sometimes be difficult to interpret, and in such cases we are reduced to formulating what appears to be the most probable explanation. We do not really feel that Dr. Ryle's friendly criticism has any bearing on our statements.

With regard to the remarks of Drs. Bennett and Moncrieff we agree that there is ample evidence in the literature that ulcers are sometimes healed under all sorts of treatment—sometimes, indeed, in spite of treatment. There is little doubt that many patients must be the victims of acute ulceration without experiencing any symptoms whatever, and it is equally certain that these acute ulcers tend to heal very rapidly. We also agree as to the importance of attending to septic foci, such as infected teeth, but unless we are misinformed with regard to the general attitude of the profession on this subject there is at present little risk of the teeth, septic or otherwise, being overlooked. No doubt judicious spacing of diet is useful, and, while no one doubts that much can be done by diet, the present unsatisfactory position of the treatment of ulcer proves that something more is required.

As already stated, the main purpose of our article was to help the general practitioner, and to point out that by means of an exceedingly simple method he can treat with success the great majority of the usual cases of gastric and duodenal ulcer. The chief part of the article contains the evidence for this claim and was presented in the radiograms. The comparatively short text was given to explain the reason for the treatment and was meant as a simple practical exposition of a successful method. In such an article, which must not be considered as a general scientific discussion of the subject, no references are required. In a future article we hope to deal with the subject more fully when all the pertinent references will be given.

Finally, we would emphasise the statement made in our paper that the method has been in use by us for about five years, and that it was only after an experience extending over this period that we thought it advisable to make it more widely known. We possess radiograms showing quite definitely that patients treated four or five years ago still show no evidence whatever of any return of the ulceration. In the face of the very definite statement to this effect made in our paper it is misleading to say that our experience only extends over a year or so. Our experience goes back for over ten years in the case of a few patients, and for four to five years in the case of a fairly large number of patients.

We would like to point out that it may be advisable in some patients to give the alkali three times a day for several months after the ulcer symptoms have passed over; also, after an operation for ulcer, it is, in our opinion, advisable to give some alkaline treatment for a considerable time.

We are, Sir, yours faithfully,

HUGH MACLEAN,
ISAAC JONES,
GEOFFREY FILDES.

St. Thomas's Hospital, S.E.,
Jan. 17th, 1928.

HYDNOCARPATES AND IODIDES IN LEPROSY.

To the Editor of THE LANCET.

SIR,—I have read with great interest Sir Leonard Rogers's article on the curative action of hydnocarpates and iodides in leprosy, published in your issue of Jan. 14th. The fact that, according to Sir Leonard Rogers, alepol has no irritating effect on the veins certainly gives it an advantage over other preparations. However, it is impossible to assert its superiority in therapeutic action, as its discovery is so recent that no definite statistics can be obtained until tests covering a considerable number of years have been made. In my opinion the lepricide action of sodium hydnocarpate is of little value. Many preparations such as turpentine, salicylate, antimony, &c., if administered in adequate quantities at the vital moment produce entirely similar reactions. I consider the use of iodides to be extremely dangerous and have myself seen a patient apparently cured relapse under their action.

In his Croonian lectures of 1924 Sir Leonard Rogers declared with similar enthusiasm that chaulmoogra oils and its derivatives would cause the total elimination of leprosy from the earth in a relatively short time. Many leprologists who expected great things on the strength of this statement were so disappointed by the results obtained that they have ended by mistrusting this method of treating leprosy. Notwithstanding the undoubted advances that have been made in the treatment of this deceptive disease during the last ten years, my experience has led me to the conclusion that there is no remedy entitled to be called "specific." I believe that the future treatment lies in the use of specific vaccines which unfortunately cannot at present be prepared from artificial cultures.

I am, Sir, yours faithfully,

JAMES HASSON, M.D.

Cleveland-square, W., Jan. 14th, 1928.

GONORRHŒAL URETHRITIS IN MALE CHILDREN.

To the Editor of THE LANCET.

SIR,—Writing in THE LANCET of Sept. 24th, 1927, Mr. B. Buckley Sharp finds that this condition is of rare occurrence. Here in Bombay, unfortunately, it is fairly common, and during my experience of two years at the J. J. Hospital, Bombay, I have seen about 30 cases of gonorrhœal urethritis in boys under 12. I agree that it is only on rare occasions that infection spreads beyond the anterior urethra, but I have seen a boy aged 8½ who had gonorrhœal arthritis with the prostate and vesicles definitely enlarged and tender. In another case, a boy aged 11, there was marked left epididymitis which subsided under appropriate treatment within eight days.

I am, Sir, yours faithfully,

K. TURNER,

Hon. Assistant Surgeon (Venereal Department),

Dec. 27th, 1927. J. J. Hospital, Bombay.

FACIAL LUPUS.

To the Editor of THE LANCET.

SIR,—In your issue of Nov. 26th, 1927 (p. 1118), appeared a very interesting account of light treatment in the London Hospital by Dr. Sequeira and Dr. O'Donovan. In their experience one type of facial lupus has proved extremely resistant to treatment. In their own words: "The most unfavourable type is that in which there is great thickening of the whole skin. When the face is involved the lips and cheeks become bloated and purplish-red in colour with a form of lymphatic infiltration resembling a pseudo-elephantiasis. Such cases are not common, but I have followed several from their early stages and have found nothing influence them." And "there is also a small percentage of cases that we cannot influence, particularly what may be called the 'facial lymphatic' type. Light baths have little or no effect." One such case has recently been treated at Leysin by Dr. A. Rollier, and I feel it may be of interest to mention that definite improvement was obtained by general sun and air cure. The case was recently presented to the Royal Society of Medicine by Dr. H. C. Semon, who has contributed an account of it, with illustrative photographs, to the Society's *Proceedings* (1927, xxi., 185).

I am, Sir, yours faithfully,

Leysin, Dec. 1st, 1927. T. W. T. DILLON.

NERVOUS INSTABILITY AND THE INTAKE OF SUGAR.

To the Editor of THE LANCET.

SIR,—May I suggest that the relationship between sugar consumption and many of those various nervous states grouped somewhat loosely as "neurasthenic" would warrant careful investigation? I believe it to be true that the consumption of sugar per head has increased by roughly twenty times during the last 60 years. Cases of nervous instability become more prevalent. That some endocrine disturbance occurs in many is a growing conviction. It seems possible that excessive intake of sugar is largely responsible for such disorder. To obtain proof from feeding experiments upon animals is difficult, because subjective symptoms similar to the early hypersensitive manifestations which occur in civilised man are not easy to follow in animals. Conclusions drawn from clinical observations may have far-reaching results. I am, Sir, yours faithfully,

London, Jan. 9th, 1928. MACPHERSON LAWRIE.

AN OPERATION FOR THE ALLEVIATION OF DEAFNESS.

To the Editor of THE LANCET.

SIR,—I have read with interest the account given by Major Nesfield of his operation in your issue of Dec. 24th, 1927, as well as the ensuing correspondence, a part of which seems to deal rather with a wish to prevent possible infringement of copyright of another operation designed for a different purpose. Dr. William Hill strikes a necessary warning note as to the failure of former suggestions, and rightly stresses the necessity for careful investigation of results of the new method. It should, however, be borne in mind that, because earlier operations have failed in their object, there is no reason why later ones, carefully designed, should not be successful. The idea of the Nesfield method seems to be based upon rational lines, but there would appear to be a possible danger of its practice falling into inexperienced hands and faulty technique and after-treatment resulting in failure and possible disaster from suppuration or other untoward results. Another danger lies in the possible indiscriminate application of the method and its employment in cases where other and less drastic treatment would suffice. It is only fair to note that Major Nesfield, in his reply to criticism, issues a warning against this latter danger. I call to mind, however, a case which came into my hands some 12 or 13 years ago. It was suggested by a competent otologist to a lady suffering with a blocked Eustachian tube on one side that she should submit to a mastoid operation for the purpose of dilating the tube from the tympanum because it was impossible to introduce a Eustachian catheter. Naturally she demurred. The correction of a very marked deviation of the nasal septum resulted in making the passage of the catheter perfectly easy, and subsequent treatment restored her hearing.

I am, Sir, yours faithfully,

MACLEOD YEARSLEY.

Wimpole-street, W., Jan. 15th, 1928.

To the Editor of THE LANCET.

SIR,—The view taken by skilled otologists of the operation is clearly shown and, if I may say so, very nicely put, in your correspondence column of last

week. It would be easy, but is hardly necessary, to add to the technical objections there made. Whenever any alleged new remedy for anything is promulgated (particularly when as in this case it gets into the lay press), what is likely to be the natural effect upon the public? For one thing, premature if not quite baseless hopes are raised. Since the publication of this new cure for deafness in "ears healthy except for deafness," I, as doubtless all your correspondents, have been bombarded with questions: Is it any good? Do you recommend it? Will you do it? and so forth. This public aspect of the matter has not so far been mentioned and is clearly a very important aspect. I join with the others in calling for further information and in the meantime shall continue to be guided by experiences which are precisely the same as those of your recent correspondents, so far as alleviation or cure of deafness by a fistula is concerned.

I am, Sir, yours faithfully,

T. JEFFERSON FAULDER.

London, W., Jan. 16th, 1928.

To the Editor of THE LANCET.

SIR,—I am loath to condemn Major Nesfield's suggested operation for the alleviation of deafness, but having contended with Eustachian tubes and middle ears for 40 years is the excuse for my making these remarks. If his cases of deafness were only caused by Eustachian stenosis why make a false passage to ventilate the middle ear, instead of opening the tube? In every case of deafness it is essential to make sure the tube is functioning properly; if it is not, to make it do so. The action of the tube with its accompanying muscles is of a very complex nature, and no false passage directly communicating with the atmosphere can take its place. As so many forms of deafness exist—the conditions of the tube and surrounding tissues all varying in character—it would be interesting to know what class of case Major Nesfield proposes to attack. It would be necessary also to know how the condition of the tubes was examined. These are only a few of the points I would like to remark on. I am, Sir, yours faithfully,

CLAUD WOAKES.

Park-square West, N.W., Jan. 17th, 1928.

FATALITY-RATES OF SMALL-POX IN THE VACCINATED AND UNVACCINATED.

To the Editor of THE LANCET.

SIR,—Dr. Garrow's inquiry *re* the above is very easily answered.

It is generally known that the immunity conferred by vaccination lasts for a limited time only. The period is variously estimated as between 10 and 13 years. By selecting cases over 15 Dr. Garrow is careful to include all cases vaccinated in infancy, but no longer protected. His statement that "the fatality-rate among vaccinated cases was just five times as great as among unvaccinated cases" is therefore grossly misleading.

It is, in my opinion, most regrettable that a medical man occupying a responsible position should broadcast in the medical press such an assertion which he must be aware will be quoted on his authority and without context by the antivaccinist press. This kind of action can do nothing but handicap his colleagues, who are engaged in combating the present epidemic of small-pox with its serious burden on the public funds, the loss of wages involved, and the damage to industry, quite apart from the detriment to public health, which in my recent experience is becoming more serious as the infection is passed through the human medium.

I am, Sir, yours faithfully,

FRED. E. WYNNE,

Jan. 16th, 1928. Medical Officer of Health, Sheffield.

ORAL ADMINISTRATION OF INSULIN.

To the Editor of THE LANCET.

SIR,—In the leading article on the Treatment of Diabetes in THE LANCET of Sept. 3rd, 1927, it is said that: "Attempts to secure a form of insulin which acts after oral administration have so far proved ineffective . . ." This statement proves certainly true for the ordinary preparations of insulin and is also in perfect harmony with the general opinion among physicians—in England. In other countries, however, many a doctor has, for years already, become accustomed to the internal application of insulin and quite a number among them, diabetics themselves, are using insulin pills regularly ever since and are very satisfied with the result. Several hundreds of reports, that have been graciously put at my disposal by colleagues thoroughly acquainted with the oral application of insulin, are unanimous about its antidiabetic as well as its roborant effect; within 8–10 days of such treatment the output of sugar with the urine diminishes gradually and remarkably, the average saving being 80 g. pro die, whereas the greatest amount observed till now has been as much as 270 g. pro die. The pain of thirst and other complaints disappear already during the first days of treatment, and as a rule the patient becomes fit again for work within the first fortnight. The patients, of course, have to observe a certain diet, but no change of diet is allowed after the beginning of the internal insulin treatment, so that any decrease of the glycosuria can only be attributed to the influence of the insulin itself.

As I am quite aware of the strange fact that, unlike in other sciences, in medicine ever so many genuine and authentic testimonials of colleagues carry but little weight with them in the opinion of other doctors, especially foreign ones, I should be delighted to enable any English colleague who wants to repeat the above-mentioned experiments to do so by putting at his disposal any amount of insulin pills. In putting the oral insulin on trial it must be remembered that its indications as well as its effects differ in several respects greatly from that of the injected insulin. Whoever would expect the insulin pills to act as quickly on the glycosuria, or as strongly on the glycæmia, as the injected insulin must necessarily become disappointed. The effect of the orally administered insulin on the glycæmia is, in fact, to be compared with that of the physiologically produced hormone of the pancreas; neither of them causes any leap of the concentration of the sugar in the blood, and both of them try to keep it at a certain level.

Regarding the indications of the oral application of insulin it is advisable to exclude two big categories of diabetics—those who ought to get injections of insulin and those who are able to observe always a diet that makes their glycosuria disappear. The remaining (medium) category of diabetics is not as unimportant as one might be inclined to think judging from hospital observations only; in fact, it is numerous enough to allow a fair trial of the possibility of a successful oral treatment with insulin. To begin with it can do them no harm whatever, and, judging from the many cases that have been under permanent medical observation for two or three years, the progress of their disease will be checked, their glycosuria diminish, their complaints disappear, and their efficiency for work be restored—a result that seems to be quite important enough, if not for the specialist, certainly for the general practitioner and his clients.

The insulin used in all the experiments mentioned above and partly published in foreign medical journals is, as already pointed out, not the usual one, but a specially concentrated one with the addition of purified ox-bile, that according to Besredka facilitates the intestinal resorption, and according to Landois checks the destroying influence of the trypsin on the

insulin. The antidiabetic effect of one of these insulin pills corresponds to four international units of insulin. I am, Sir, yours faithfully,

Saarbruecken. F. W. FORNET, M.D.

*** Dr. Fornet encloses extracts from German medical journals published during the last twelve-month and dealing with the results of insulin taken by the mouth. Apparently no determinations were made of blood-sugar, and it seems to have been a mild form of diabetes with which the several clinicians were dealing. In this country we are well aware that the mild forms of diabetes are readily influenced by changes in diet which it is difficult entirely to rule out. The work of Harrison, Lawrence, and Graham showed that no effect was produced on the blood-sugar by administering raw pancreas by the mouth when the diet was under perfect control. If it is admitted that insulin may have some effect on blood-sugar in rabbits and dogs when given by mouth with saponin, it seems that in the human subject the dose of saponin has to be relatively larger to produce any result at all, and even then the results are very variable.—ED. L.

THE TREATMENT OF THE MALARIAS.

To the Editor of THE LANCET.

SIR,—The introduction of any new drug of potential value in the treatment of malaria is an event of the first importance in tropical medicine, so it is very natural that it will be subjected to a considerable amount of criticism and claims of its efficacy regarded with scepticism. This is only as it should be. A study of the history of specific drugs reveals much the same sequence of events. The initial results are too often painted couleur-de-rose and therapeutic doses exhibited too large. This was so in the case of quinine itself, more recently in that of salvarsan and carbon tetrachloride.

A perusal of your leading article of Jan. 14th (p. 87) has led me to make some observations in order to remove misapprehensions. The writer of that article, though well versed in the literature of the subject, has obviously had no first-hand experience of plasmochin (or plasmoquine) in the treatment of malaria. As I pointed out in my original paper,[1] "The action of Plasmochin in Malaria," the initial doses of the drug as advocated by Mühlens were too large, thereby predisposing to symptoms of intoxication, especially in the subtertian form of malaria. There can be no doubt, however, from the observations of other workers as well as my own that this drug exerts a specific action on the gametocytes of the benign as well as of the subtertian forms. In an acute disease such as the latter form of malaria it is very difficult indeed to be certain whether alarming symptoms which may develop are due to the parasite itself or to the drug. It is a familiar experience that the same difficulty is encountered with quinine, but when plasmochin is combined with small doses of quinine (i.e., plasmochin-compound) the toxic effects of the former are counteracted and, in my experience, no untoward symptoms are encountered. This I have stated emphatically in my paper in THE LANCET of Jan. 7th (p. 25). The series of cases quoted there is comparatively small, but I have exhibited the drug to some 100 other individuals in whom, for one reason or other, no detailed records could be kept. In no instance have I encountered genuine intolerance and most certainly I have not seen any fatal or alarming symptoms, nor have I heard of such. In any new departure such as this these exaggerated statements are bound to be made. In addition to removing or neutralising the toxic element plasmochin-compound has the same startling effect upon the gametocytes, especially on the crescents of subtertian malaria, and it is (probably from the contained quinine) much more effective in acute subtertian cases with numerous ring forms (or schizonts) in which parasitic relapses used to occur on the pure plasmochin treatment. In no case which I have had under observation have the crescents recurred in the peripheral blood after their primary disappearance, and my records have been very carefully kept. It is true that plasmochin-compound has been issued in two forms. The first was purely experimental; the larger tablets each contained 0·01 g. plasmochin and 0·125 g. quinine sulphate. The second now on the market contains half that amount—i.e., 0·005 g. plasmochin and 0·0625 g. quinine sulphate. Your reviewer is clearly in error on this point, as he has quoted figures twice this size, and his statement on this point needs correction. The daily dosage I would advocate as the result of my recent investigations is one of 0·06 g. plasmochin plus 0·75 g. quinine sulphate (i.e., gr. 9¼ or twelve of the plasmochin-compound tablets). Every clinician experienced in tropical medicine is agreed that the latter dose of *uncombined* quinine is too small to control a bad attack of malaria and is certainly inoperative upon the crescent form.

Whatever the value of conflicting testimony may be it is abundantly clear that a new specific has been introduced into our armamentarium quâ malaria. More extensive experience on its use will no doubt modify the dosage, and it is too early yet to say how far-reaching the importance of this discovery may be, but for those who are dissatisfied with the shortcomings of pure quinine (and their name is legion) the introduction of plasmochin is a step in the right direction. I am, Sir, yours faithfully,

PHILIP MANSON-BAHR, M.D., F.R.C.P.,
Physician to the Hospital for Tropical Diseases,
Jan. 17th, 1928. London.

[1] Proc. Roy. Soc. Med., 1927, xx., 919.

To the Editor of THE LANCET.

SIR,—Perhaps one reason why there is a shortage of quinine is that, being regarded as a "cure" for malaria, it is prescribed in large and continuous doses which involve much waste of the drug and many examples of cinchonism. As treatment quinine is, of course, invaluable, but the cure of malaria depends on the ultimate development of sufficient immune bodies to control the plasmodium in all its forms. I suggest that grs. 20 is an ample maximum daily dose, and that, when after four days the patient has lost his fever and is convalescent, he should be allowed a rest from quinine in order that all traces of the drug may be excreted and, in order that his own defence forces may have an opportunity of taking part in the fight for the patient's complete restoration to health the administration of quinine being continued on these lines for a sufficient period but with a gradual decrease in the days of taking and an increase in the days of rest from quinine.

Put shortly, I urge that quinine should be given intermittently for the following reasons: (1) Cinchonism in its many forms is mostly avoided (2) as a result of (1) patients continue their treatment (3) there is a great saving—amounting to nearly 50 per cent.—in the amount of quinine used; (4) the case-results are very satisfactory.

I am, Sir, yours faithfully,

London, Jan. 17th, 1928. V. S. HODSON.

RECURRENT COLDS.

To the Editor of THE LANCET.

SIR,—Some of your recent correspondents on the above subject have spoilt a good case by over-statement. "Cold-catching" seldom troubles those who live in a well-managed open-air sanatorium but they do not find it necessary to dispense with underclothing, excepting in very hot weather. Three points are of importance: training to react against chill; avoidance of excessive infection from without and the removal of infective foci within the body. Such training should be carried out with due regard

the individual reactive capacity at the time; we annot all, or in all states of health, bathe with mpunity in the ice-covered Serpentine. Overheated, nderventilated places, and those with an unvarying emperature, are risky for most people. To avoid utside infection much greater care should be taken n removing household dust than is usual in most omes, preferably by wet cleaning. But the greatest rotection is an open-air life, with a little common ense. I am, Sir, yours faithfully,

Farnham, Jan. 16th, 1928. F. R. WALTERS.

Obituary.

REDERICK GORDON BROWN, M.R.C.S., L.S.A.

THE death is announced at the advanced age of 85 Dr. Frederick Gordon Brown, who practised in the ty of London for many years and who died at ailours, Chigwell, Essex, on Sunday last, Jan. 15th. he son of a doctor who practised in Wormwood-street, .C., Gordon Brown was born in the City, and educated Merchant Taylor's School. He received his medical lucation at St. Thomas's Hospital, where he held sident appointments after qualification in 1863. He en attended post-graduate courses in Paris before tering upon practice. He soon won for himself a od position, and for 52 years was a medical officer of e City of London Union and for over 28 years surgeon the City of London police. He was also formerly rgeon to the Royal Hospital, Bridewell, and the ildhall School of Music, so that his associations th the City were many and intimate. He was for any years in partnership in Finsbury-circus with . A. P. Gibbons, and although he retired in ptember, 1914, he acted for various younger men ring the war in order to release them for war service. e was at the time of his death the Senior Past Master the Society of Apothecaries, and a past president the Hunterian Society. He was also a prominent eemason, being a Past Grand Officer of the Grand dge of England.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Capt. J. R. Muir is placed on the Retd. List with nk of Surg. Rear Admiral.

To be Surg. Lts.: J. A. K. FitzGerald, J. W. Nesbitt, D. Sinclair, E. R. P. Williams, and A. E. Kingston.

ROYAL ARMY MEDICAL CORPS.

Lt.-Col. D. S. Skelton from the secd. list is restd. to the abt.

Capt. J. H. Bayley to be Maj.

Lt. W. D. Speedy resigns his commn.

ARMY DENTAL CORPS.

Lt. D. C. Blyth to be Capt.

Temp. Lt. A. Brazenor, Dental Surg., Gen. List, to be Lt.

TERRITORIAL ARMY.

Maj. J. Wallace, from T.A. Res. of Off., to be Maj.

Capt. W. W. Brown, late R.A.M.C. (Spec. Res.), to be pt.

Capt. (Prov.) R. N. Craig is confirmed in his rank.

Lts. A. C. Crawford, D. R. Owen, and C. E. W. Bower be Capts.

Lt. R. Walkingshaw resigns his commn.

C. C. Ryan to be Lt.

Supernumerary for service with O.T.C.: Capt. J. F. Smith igns his commn.

ROYAL AIR FORCE.

Flying Officers promoted to the rank of Flight Lt.: I. Hyder and J. Magner.

Flight Lt. F. K. Wilson is transferred to the Reserve, ss D.II.

Flight Lt. (Hon. Squadron Leader) E. F. N. Currey relinquishes his temporary commission on completion of service.

Flying Officer F. S. S. Whiter is promoted to the rank of Flight Lt. (Dental) on promotion to Captain in the Army Dental Corps.

AUXILIARY AIR FORCE.

No. 601 County of London (Bombing) Squadron: Pilot Officer E. D. W. Reid to be Flying Officer.

INDIAN MEDICAL SERVICE.

Lt.-Cols. J. D. Graham, M. MacKelvie, and W. H. C. Forster to be Cols.

Lt. J. H. Clapp to be Capt. (Prov.).

Lt.-Col. T. S. Novis retires.

DEATHS IN THE SERVICES.

Lieut.-Colonel Paxton St. Clair More, O.B.E., late I.M.S., who died at Bournemouth on Jan. 8th, aged 61, graduated in medicine and surgery at Edinburgh University in 1891, where he was for a time assistant demonstrator of practical physiology and pathology. He entered the Indian Medical Service and was at the Relief of Chitral in 1895. He also served in Iraq, and in 1920 was mentioned in dispatches and was awarded the O.B.E.

Medical News.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—At a meeting of the Council held on Jan. 12th Sir Berkeley Moynihan, the President, in the chair, diplomas of Membership were granted to the following:—

Eleanor M. Carless, Royal Free Hosp.; Abani Mohan Chaudhuri, Calcutta and St. Bart.'s; Thomas E. Lamech, Cambridge and St. Thomas's; Mary M. Moller and Lois J. Ogle, Royal Free Hosp.; and Pattiyapotherannehelage Paul Peries, Ceylon and King's College.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH.—The Morison lecture will be delivered at the College on Wednesday, Jan. 25th, by Dr. George M. Robertson. His subject will be the Teaching of Psychiatry in Edinburgh and Sir Alexander Morison.

UNIVERSITY OF SHEFFIELD.—At examinations held recently in the Faculty of Medicine, the following candidates were successful:—

M.D.—Marion Hirst.

Final M.B., Ch.B. Examination.—Part II.: Humphrey Brookes, Albert O. Flint, Patrick B. Lee-Potter, and Vernon E. A. Marwood. *Part I.:* William Alcock, Doris Butler, Dorothy Colver, Reginald D. Dewar, Traugott E. Gumpert, Kenneth J. G. Milne (with distinction in Public Health), Trevor K. Owen, Geoffrey B. Thomas, Walter A. Timperley, and Joan J. J. Wallace.

UNIVERSITY OF LIVERPOOL.—At a recent examination the following candidates were successful:—

DIPLOMA IN PUBLIC HEALTH.

V. H. Atkinson, Annie T. Deane, Sybil O. Edwards, and A. N. Malhotra.

PREVENTION OF INDUSTRIAL ACCIDENTS.—A conference on Accident Prevention is to be held under the auspices of the Industrial Welfare Society at the Hotel Metropole, Northumberland-avenue, London, on Friday, Jan. 27th. Details may be had from Mr. G. P. Holden at 151, Palace-street, S.W. 1.

The fifth International Medical Congress for Industrial Accidents and Occupational Diseases is to be held in Budapest from Sept. 2nd to 8th. The Executive Committee consists of Prof. Tibor de Verebély (President), Prof. William de Friedrich (vice-president), and Dr. George Gortvay (secretary general). Addresses will be given, amongst others, by Prof. J. Liniger, Dr. F. Zollinger, Prof. K. B. Lehmann, Sir Thomas Oliver, Prof. J. G. Sleeswijk, Prof. Jütten, Prof. Koelsch, Prof. Julius van der Hoeve, and Prof. Stephan Jellinek. Although industrial diseases will receive consideration, particular prominence will be given in the programme to industrial accidents, as in 1929 a congress specially devoted to diseases is to be held in Lyons under the auspices of the Congress for Occupational Diseases. The Council of Industrial Medicine has been nominated to act as the British National Committee, and further information can be had from the Secretary, 12, Stratford-place, London, W. 1.

UNIVERSITY OF LONDON: *University College.*—A course of six lectures on the Internal Secretions of the Gonads will be given by Mr. A. S. Parkes, D.Sc., on Mondays, Jan. 30th, Feb. 6th, 13th, 20th, and 27th, and March 5th, at 5 P.M. Admission will be free, without ticket.

UNIVERSITY OF MANCHESTER.—Prof. J. S. B. Stopford, F.R.S., has been appointed a Pro-Vice-Chancellor of the University.

RESEARCH ON THE COMMON COLD.—The sum of £39,000 has been given to Johns Hopkins University, Baltimore, to pay for research into the origin, nature, and possible cure of the common cold.

THE SUPPRESSION OF QUACKERY.—The California Medical Association has received under the will of the late Dr. Morris Herzstein a bequest of 20,000 dollars to be used in the suppression of quackery in the practice of medicine.

POST-GRADUATE STUDY IN BERLIN.—A programme of numerous courses of lectures to be held in March and April has now been issued by the Kaiserin Friedrich-Haus, Luisenplatz, 2–4, Berlin, N.W. 6. This organisation assists foreigners to secure suitable lodgings, and can also arrange visits to clinics and hospitals.

CENTRAL ASSOCIATION FOR MENTAL WELFARE.—A special ten weeks' course is being held in London from May 11th to July 19th for teachers of mentally defective and of dull and backward children. It is intended for those with no previous experience of the work. Since 1925 three similar courses have been arranged by the Association with the full approval of the Board of Education.

ROYAL NATIONAL ORTHOPÆDIC HOSPITAL.—A Festival Dinner will be held on Monday, Jan. 30th, at the Mansion House, London, by invitation of the Lord Mayor. Prince Henry will preside. An effort will be made to raise funds to pay off the debt of £40,000 created by extensions at the country branch at Stanmore.

AMALGAMATION OF WOLVERHAMPTON HOSPITALS.—It is proposed to amalgamate the Wolverhampton and Staffordshire Hospital and the Wolverhampton Hospital for Women, and the Hospital Saturday Committees of the two institutions have unanimously approved of the scheme on the ground that it will provide a more efficient service. The general hospital at present has 210 and the women's hospital 30 beds, but enlargements in progress at both institutions will increase the accommodation approximately to 300 beds.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—Dr. W. A. Potts will lecture on Mental Defect and its Importance to the Community, on Monday, Jan. 23rd, at 5 P.M., at the rooms of the Medical Society of London, 11, Chandos-street, Cavendish-square. On the same date, at 3 P.M., at the Royal Eye Hospital, Southwark, Mr. McCallan will give a clinical demonstration, and Mr. Mortimer Woolf a general surgical demonstration at 2 P.M., at the Queen Mary's Hospital, Stratford. On Thursday, Jan. 26th, at 1.30 P.M., Sir Thomas Horder will demonstrate at St. Bartholomew's Hospital. The lectures and demonstrations are open to members of the medical profession without fee. Six lecture-demonstrations on Psychological Medicine, held on Tuesdays and Saturdays at 11 A.M., at the Bethlem Royal Hospital, have still to be given. From Feb. 6th, for four weeks, a course in Venereal Diseases will be given at the London Lock Hospital, consisting of lectures and clinical instruction in the out-patient department. Early application should be made. From Jan. 30th to Feb. 25th a course will be held at the London School of Dermatology (St. John's Hospital); clinical instruction will be given in the out-patient department every day, and lectures on Tuesdays and Thursdays at 5 P.M. (practical pathological demonstrations can also be arranged). An all-day course in Diseases of Children will be given from Feb. 6th to 18th at the Paddington Green Hospital and at the Victoria Hospital for Children; sessions at the former hospital will be held on Feb. 7th, 8th, 10th, 13th, and 17th, and at the latter on Feb. 6th, 9th, 11th, 14th, 15th, and 18th. Early application is requested. From Feb. 20th to March 3rd, at the Queen Mary's Hospital, Stratford, an all-day course will be given in medicine, surgery, and the specialties. From Jan. 30th to March 23rd, at the National Hospital, Queen-square, a course will be held in neurology, anatomy, and physiology of the nervous system, and demonstrations will be given on methods of clinical diagnosis in diseases of the nervous system and in pathology. Information, syllabuses, tickets, and copies of the *Post-Graduate Medical Journal* may be had from the Secretary of the Fellowship at 1, Wimpole-street, London, W. 1.

PRESENTATION TO A MEDICAL MAN.—Dr. Edwar Fielden was recently presented with a cheque and a illuminated book containing the names of 1400 people wh wished to show their appreciation of his services durir more than 25 years of practice at Bracknell, in Berkshire.

LIVERPOOL HOSPITAL FOR DISEASES OF THE HEAR Miss Margaret Beavan, Lord Mayor of Liverpool, last wee opened a new operating theatre and an additional ward t mark the second anniversary of the opening of the institu tion. The extension increases the number of beds to 3 The Lord Mayor was presented with a silver casket as souvenir.

IMPORTATION OF SYNTHALIN.—The Board of Trad have given notice that representations have been made t them under Section 10 (5) of the Finance Act, 1926, regardir hydrocyanic acid and synthalin (Deka methylene diguanidin hydrochloride). This section provides that the Treasur may exempt from the duty imposed by the Safeguarding Industries Act, 1921, any article which is not made in an part of His Majesty's Dominions in quantities which a substantial, having regard to its consumption for the tim being in the United Kingdom, if there is no reasonab probability that it will within a reasonable period be ma in His Majesty's Dominions in such quantities. Any perso wishing to communicate with the Board about this applic tion should write to the Principal Assistant Secretar Industries and Manufactures Department, Board of Trad Great George-street, S.W. 1, before Feb. 12th.

Medical Diary.

Information to be included in this column should reach in proper form on Tuesday, and cannot appear if it reac us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MONDAY, Jan. 23rd.—8 P.M., ODONTOLOGY. Pap Mr. Arthur Bulleid: On Apical Infection; Cas communications: Mr. H. P. Baylis: Case of Necro of the Mandible. Mr. W. Rushton: An Abnorma Small Premolar.

TUESDAY.—5 P.M., MEDICINE. Discussion on Card Infarction (Coronary Thrombosis). Openers: John Parkinson and Dr. D. Evan Bedford. Ot Speakers: Dr. Carey Coombs, Dr. Geoffrey Hadfi Dr. J. A. Ryle, and Dr. B. T. Parsons-Smith.

WEDNESDAY.—5 P.M. TROPICAL DISEASES, DERMATOLO AND COMPARATIVE MEDICINE. Special Discussion Cutaneous Mycoses in the Tropics. Openers: Mr Ramsbottom (for the Section of Tropical Diseas Dr. A. Whitfield (for the Section of Dermatology

THURSDAY.—5 P.M., BALNEOLOGY. Paper: Dr. Ado Schott (Bad Nauheim): Carbon Dioxide Ther Saline Springs in the Light of Modern Resea 8.30 P.M., UROLOGY. Clinical Pathological Evening

FRIDAY.—5 P.M., DISEASE IN CHILDREN. (Cases 4.30 P.M.) 8 P.M., EPIDEMIOLOGY. Paper: Dr. J. McCartney and Dr. Wm. C. Harvey: Some Obse tions on Diphtheria Carriers.

MEDICAL SOCIETY OF LONDON, 11, Chandos-str Cavendish-square, W.

MONDAY, Jan. 23rd.—8.30 P.M., Discussion on Treatmen Pernicious Anæmia, to be introduced by Prof. F. Fraser, followed by Sir William Willcox and Dr. French.

MEDICO-LEGAL SOCIETY.

THURSDAY, Jan. 26th.—8.30 P.M. (at 11, Chandos-st Cavendish-square, W.), Mr. F. Llewellyn-Jon Drunkenness and Civil and Criminal Responsibilit A Study in Comparative Law.

MEDICAL SOCIETY FOR THE STUDY OF VENEREL DISEASES, 11, Chandos-street, Cavendish-square, W.

FRIDAY, Jan. 27th.—8.30 P.M., General Meeting. Pa will be read by Colonel L. W. Harrison and Dr. D Nabarro on the Antenatal Treatment of Vene Disease—Syphilis. A discussion will follow.

ST. JOHN'S HOSPITAL DERMATOLOGICAL SOCIE FRIDAY, Jan. 27th.—4.15 P.M. (at St. John's Hosp 49, Leicester-square, W.C.), Clinical Cases.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c

FELLOWSHIP OF MEDICINE AND POST-GRADUA MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, Jan. 23rd, to SATURDAY Jan. 28th.—FELLOW OF MEDICINE Lecture at the Medical Society, Chandos-street, W. Mon., Dr. W. A. Potts: Mental Defect and its Importance to the Communit QUEEN MARY'S HOSPITAL, Stratford, E. Mon., 2

Mr. Mortimer Woolf: General Surgical Demonstration.—ROYAL EYE HOSPITAL, Southwark, S.E. Mon., 3 P.M., Clinical Demonstration by Mr. MacCallan. The above are free to members of the medical profession.—BETHLEM ROYAL HOSPITAL, St. George's Fields, S.E. Course in Psychological Medicine. Lecture-demonstrations Tues. and Sat., at 11 A.M.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, W.

MONDAY, Jan. 23rd.—10 A.M., Dr. Dowling: Skin Department. 11 A.M., Mr. Tyrrell Gray: Surgical Wards. 2 P.M., Dr. Trevor Davies: Gynæcological Department.

TUESDAY.—2 P.M., Dr. Shaw: Medical Out-patients. 2 P.M., Mr. Sinclair: Surgical Out-patients. 2 P.M., Mr. Hamblen Thomas: Throat, Nose and Ear Department.

WEDNESDAY.—10 A.M., Dr. Burnford: Medical Wards. 2 P.M., Mr. Tyrrell Gray: Operations. 2.30 P.M., Mr. Donald Armour: Surgical Wards.

THURSDAY.—10 A.M., Dr. Grainger Stewart: Neurological Department. 2 P.M., Mr. MacDonald: Genito-urinary Department. 2 P.M., Mr. Bishop Harman: Eye Department.

FRIDAY.—10 A.M., Dr. Pritchard: Special Medical Treatment Clinic. 2 P.M., Mr. Vlasto: Throat, Nose and Ear Department. 4.30 P.M., Dr. Archer: Carbohydrate Tolerance Tests (lecture-demonstration).

SATURDAY.—10 A.M., Dr. Burnford: Bacterial Therapy. 10 A.M., Dr. Owen: Medical Diseases of Children.

Medical and Surgical Out-patients, Operations, Special Departments, daily, 10 A.M. to 5 P.M., Saturdays, 10 A.M. to 1 P.M.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham.

MONDAY, Jan. 23rd.—2.30 to 5 P.M., Medical, Surgical, and Gynæcological Clinics. Operations.

TUESDAY.—2.30 to 5 P.M., Medical, Surgical, Throat, Nose and Ear Clinics. Operations.

WEDNESDAY.—2.30 to 5 P.M., Medical, Skin, and Eye Clinics. Operations.

THURSDAY.—11.30 A.M., Dental Clinics. 2.30 to 5 P.M., Medical, Surgical, and Ear, Nose and Throat Clinics. Operations.

FRIDAY.—10.30 A.M., Throat, Nose and Ear Clinics. 2.30 to 5 P.M., Surgical, Medical, and Children's Diseases Clinics. Operations.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.

TUESDAY, Jan. 24th.—5 P.M., Dr. W. J. O'Donovan: Exfoliative Dermatitis.

THURSDAY.—5 P.M., Dr. Knowsley Sibley: Electrotherapeutics.

CENTRAL LONDON THROAT, NOSE AND EAR HOSPITAL, Gray's Inn-road, W.C.

MONDAY, Jan. 23rd.—1.30 P.M., Mr. R. J. Cann: Examination of the Pharynx and Naso-pharynx.

WEDNESDAY.—1.30 P.M., Mr. N. Heskieth: Examination of the Nose.

FRIDAY.—4 P.M., Mr. H. Kisch: Multiple Nasal Sinusitis (1).

ROYAL NORTHERN HOSPITAL, Holloway-road, N.

TUESDAY, Jan. 24th.—3.15 P.M., Dr. C. C. Beatty: Indigestion.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.

THURSDAY, Jan. 26th.—4 P.M., Mr. Eric Lloyd: Rectal Prolapse in Childhood.

ROYAL INSTITUTE OF PUBLIC HEALTH, 37, Russell-square, W.C.

WEDNESDAY, Jan. 25th.—4.30 P.M., Dr. G. Carter: Tests for Drunkenness, particularly in Relation to Motor Accidents.

ST. MARY'S HOSPITALS, MANCHESTER (Post-Graduate Lecture).

FRIDAY, Jan. 27th.—4.30 P.M. (at the Whitworth-street West Branch), Dr. Ward: Intestinal Indigestion in Children.

UNIVERSITY OF SHEFFIELD POST-GRADUATE CLINICS.

FRIDAY, Jan. 27th.—3.30 P.M., Mr. Ferguson: Eye Cases.

Appointments.

BOLTON, S., M.D., Ch.B. Edin., has been appointed Certifying Surgeon under the Factory and Workshop Acts for Halifax.

EAGE, HILDA W., L.R.C.P. Lond., M.R.C.S., a member of the Honorary Medical Staff of the Willesden General Hospital.

GURASKY, A., M.B., Ch.B. Leeds, F.R.C.S., Assistant Ophthalmic Surgeon, London Jewish Hospital.

WHEELER, D. R., M.B., B.Ch., B.A.O. Belf., F.R.C.S. Eng. and Irel., Aural Surgeon to the County Ophthalmic and Aural Hospital, Maidstone.

Vacancies.

For further information refer to the advertisement columns.

Birkenhead General Hospital.—Cas. H.S. £100.
Birmingham City.—Sen. Asst. M.O.H. £1100.
Blyth, Borough of.—M.O.H., &c. £800.
Brighton, Royal Sussex County Hospital.—Hon. Dental Surg.
Bristol, Southmead Hospital.—Second Asst. M.O. £200.
Cambridge, Addenbrooke's Hospital.—H.S. At rate of £130.
Cardiff Royal Infirmary.—H.S.'s and H.P.'s. Each at rate of £50.
Coventry, City of.—Deputy M.O. £750.
Coventry, Gulson-road Hospital, and Poor-law Institution, &c.—Res. M.O. £500.
Downham (L.C.C.) Treatment Centre.—Ophth. S. £80. Half day per week.
Durham, Earl's House Sanatorium for Boys.—M.O. £450.
Elizabeth Garrett Anderson Hospital.—Asst. Radiologist. £100. Also Asst. Pathologist. £150. Both part-time.
Evelina Hospital for Children, Southwark, S.E.—H.P. £120.
German Hospital, E.—Hon. Asst. Surg.
Highgate Hospital, Dartmouth Park Hill, N.—Jun. Asst. Med. Supt. £325.
Infants Hospital, Vincent-square, Westminster.—H.P. At rate of £75.
Leicester Royal Infirmary.—Cas. H.S. At rate of £125.
Liverpool, City of.—City Coroner. £1000.
London Female Lock Hospital, 283, Harrow-road, W.—2nd H.S. At rate of £150.
Manchester Royal Infirmary.—Asst. M.O. £35.
Metropolitan Hospital, Kingsland-road, E.—Ophth. S.
Norfolk, Administrative County of.—County M.O.H. £1200.
Oxford, Radcliffe Infirmary and County Hospital.—Hon. Asst. Orthopædic Surg.
Oxford, Wingfield Orthopædic Hospital, Headlington.—Asst. S. £600.
Peckham House Mental Hospital, 112, Peckham-road, S.E.—Jun. Asst. M.O. £250.
Royal London Ophthalmic Hospital, City-road, E.C.—Clifford Edmonds Prize in Ophthalmology. £100.
Royal Naval Dental Service.—Five Dental Surgeons.
Royal Waterloo Hospital for Children and Women, Waterloo-road, S.E.—Non-res. Cas. O. £150.
St. Bartholomew's Hospital.—Asst. S.
St. John's Hospital, Lewisham.—Asst. P.
St. Mary's Hospital for Women and Children, Plaistow, E.—Res. M.O. and Asst. Res. M.O. At rate of £175 and £130 respectively.
Salford, City of.—Venereal Disease M.O. £750.
Shanghai Municipal Council Public Health Dept.—Asst. Radiologist. Taels 700 a month.
Sheffield Royal Hospital.—Res. Anæsthetist.
Shrewsbury, Royal Salop Infirmary.—H.P. £160.
Sleaford, Kesteven Mental Hospital.—Asst. M.O. £350.
Stoke-on-Trent City Maternity Home.—Res. M.O. £450. Also Consulting Officer. £150.
Stoke-on-Trent, North Staffordshire Royal Infirmary, Hartshill.—Hon. Asst. S., Hon. Anæsthetist, Hon. Asst. Aural S., and Hon. Asst. Orthopædic S.
Truro, Royal Cornwall Infirmary.—H.S. £170.
West London Hospital, Hammersmith-road, W.—Hon. Obstet. S.
Windsor, King Edward VII. Hospital.—Hon. Asst. Phys.
Wolverhampton and Midland Counties Eye Infirmary.—H.S. £200.
Woolwich and District War Memorial Hospital, Shooters' Hill, S.E.—Radiographer.

The Secretary of State for the Home Department gives notice that he is considering the appointment of one or more Ophthalmic Specialist Medical Referees under the above Act for County Courts in Circuits 16 and 17, which comprise roughly the East Riding of Yorkshire and Lincolnshire. Applications should be addressed to the Private Secretary, Home Office, London, S.W. 1, and should reach him not later than Feb. 7th, 1928.

The Chief Inspector of Factories announces vacancies for Certifying Factory Surgeons at Islay (Argyllshire), Wallingford (Berkshire), Fyvie (Aberdeenshire), Portree (Inverness-shire), and at Wetheral (Cumberland).

Births, Marriages, and Deaths.

BIRTHS.

DOYLE.—On Jan. 10th, at Old Bromley-road, Bromley, the wife of Dr. J. L. C. Doyle, of a daughter.

PERRIN.—On Jan. 12th, at Upper Wimpole-street, W., the wife of W. S. Perrin, F.R.C.S., of a daughter.

THOMAS.—On Jan. 11th, at Ashley-gardens, S.W., the wife of C. Price Thomas, F.R.C.S., of a son.

DEATHS.

BROWN.—On Jan. 15th, at Tailours, Chigwell, F. Gordon Brown, M.R.C.S., late surgeon of the City of London Police, Past-Master of the Society of Apothecaries, aged 85. Funeral at Chigwell to-day (Friday) at 3.15 P.M.

DINNIS.—On Jan. 15th, at Leigh Croft, Hoddesdon, Alfred Dinnis, M.R.C.S., L.R.C.P., L.D.S., aged 47.

MORE.—On Jan. 8th, Lieut.-Col. St. Clair More, O.B.E., I.M.S., at Bournemouth, aged 61.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

PALÆOPATHOLOGY AND EVOLUTION.*

By J. C. M. GIVEN, M.D., M.R.C.P. LOND., F.G.S.

THE great interest that has been taken of recent years in the history of medicine has resulted in much research and in the classification and publication of many important facts, all of which, however, are more or less confined to the historic period of which written records are available. The allied subject of the antiquity of disease is much more difficult to explore, as the chief evidence consists of the fossil remains, usually fragmentary, of a long-departed fauna.

Yet the more such evidence is collected and sifted the more it shows that disease in its protean manifestations has been a powerful agent in the elimination of the unfit, and the survival and persistence of the predominating types of life in the evolutionary struggle, and that insufficient credit has hitherto been given to this factor.

It is interesting to note that the most important causative agents of disease that we recognise to-day—namely, bacteria—were the earliest known forms of life. They probably prepared both the earth and the ocean for the further evolution of plants and animals. The fact that they did exist at this epoch was proved by Walcott [1] in 1915, when he found micrococci associated with very primitive algæ in the pre-Cambrian limestones of the Algonkian Mountains, the earliest sedimentary rocks of which the earth is built. This is only what we should expect when we consider the cyclical processes of life in the universe. All plant life depends on the nitrifying bacteria of the soil for the nitrates with which to build up its proteins; the plants are devoured by animals and new proteins are built up, and the completion of the cycle is only made possible by putrefactive organisms breaking down the nitrogenous animal tissues into free ammonia. The first lowly bacteria derived their energy and nutrition from inorganic chemical compounds such as the ammonia salts; they were, according to Osborn [2] the first step between the organic and the inorganic, and represent the survival of a primordial stage of life's chemistry. Survivors of these bacteria still persist in the nitrifying soil organisms just alluded to.

The early microbes first began a parasitic life by symbiotic relations with other bacteria; then they laid hold on the chlorophyllic carbon-storing plants, stealing carbon from the plant and nitrogen from the atmosphere, and thus started on the path which led from symbiosis to parasitism, and thence to that of pathogenic infective agents, though the last stage probably took long ages to reach.

Adami [3] points out that microbes do not form an order by themselves, but are singularly diverse in their affiliations. Whether bacteria or protozoa like the spirochætes, every pathogenic microbe has closely related forms or species, differing from them in little beyond the fact that one is virulent and that the other is not. This leads to the conclusion that all the pathogenic germs have originated in harmless saprophytes. The non-virulent diphtheroid organisms, the bane of the diagnostician, probably long preceded the Klebs-Löffler bacillus.

The Evolution of Pathogenic Bacteria.

The evolution of the various strains of these minute organisms results from changing environment, just as it does among the higher forms of life. The colon bacillus leads a harmless and probably a useful life in its native pastures of the large bowel, but when it migrates into the urinary tract it becomes endowed with very different characteristics. Similarly, in Devonian times, before our coal measures were laid down and when fishes were the sole representatives of the vertebrata, some of these, hankering after a change of scene, migrated to the land and became first amphibia, and later reptilia, which were the basal stock of the mammalia. The two processes are identical, though one, acting on a minute simple monocellular organism, may have only taken hours to bring about; the other, working on a complex vertebrate, required millions of years. This rather crude analogy may be pushed further. Bacteriologists tell us that the wandering bacilli may, by various cultural methods, be enticed back to dwell in similar surroundings to their old ones. In the same way some of the mammalia, probably in the African continent, got tired of their existence on dry land, and early in the Tertiary period reverted to a life in the ocean and became whales, dolphins, and porpoises, but retained indelible traces of their terrestrial life and mammalian origin, just as, probably, our colon bacill is never quite the same again after first leaving the intestin tract.

Bacteria do not seem to have taken on pathogen qualities until forms of life had become numerous ar varied, and their agency was not required for many millio of years as a factor in the process of natural selectio Fossils can afford little evidence of this kind, and when l was only represented by the polyzoa and the higher forms the invertebrata, such as molluscs and arthropods, it probable that traumatism, degenerative changes, and t consumption of each other as food would represent all t ills to which individuals were subject. By the time co measures were formed bacteria seem to have establishe themselves as saprophytes on the fishes of that age, Renault [4] has demonstrated them in coprolites, or fos fæces, in the Autun coalfields of France. This is perhaps instance of an early intestinal flora, the first appearance prototype of the colon bacillus. Renault also figures micrococcal type of organism in the lacunæ and canalic of the bones of fossil fishes in these coal measures. This the earliest hint of the existence of pathogenic infection.

Fossil Pathology.

From the Permian strata of Texas Roy Moodie [5] descril a microscopic section of the fractured dorsal spine of reptile, Dimetrodon, which he considers to be a case infective osteomyelitis, showing osseous trabeculæ arou large necrotic sinuses, once filled with pus and now replac by calcite crystals. This is probably the earliest kno instance of the presence of pathogenic bacteria, for t specimen must be at least 15 million years old. Anot instance by the same author [6] from a slightly later peric the Cretaceous, when our chalk downs were being form shows necrotic changes in the radius of a large aqua reptile with the formation of dense hypertrophic bone, t normal vascular spaces having been obliterated.

As an example of a simple uninfected fracture wi normal union and a moderate degree of callus we may ta the fractured radius of another reptilian Dimetrodon fr the same Permian beds.[5] A further interesting specimen i tumour in the caudal vertebra of a Diplodocus of Cretaceo age, described by Moodie as an hæmangioma. The enormous reptiles, nearly 70 ft. long and weighing appro mately 40 tons, dragged their gigantic 30 ft. tails along t ground and must have been much subject to traumatis Moodie also mentions a tumour of the jaw of a primiti horse, *Merychippus campestris*, of Miocene age, a lesion wh was evidently of long-standing and which suggests acti mycotic infection.

The earliest known human skeleton has a pathologi lesion; the femur of *Pithecanthropus erectus* of Java sho a large irregular outgrowth from the shaft, evidently of t nature of myositis ossificans. Though the geological horiz of the Rhodesian skull is uncertain, it is undoubtedly ve ancient, and is of extreme Neanderthaloid type. There a deep irregular sinus in the petrous portion of the t temporal bone just behind the external auditory meat Tracking upwards and slightly forwards from this is shallow groove on the squamous portion, and just in fr of the termination of the groove is a circular hole which g right through the squama into the cranial cavity; the ed of this foramen are quite smooth, and it must have be made ante-mortem. Macleod Yearsley declared that the abnormalities were due to mastoid disease, and it is fai obvious that the mastoid abscess opened behind the exter auditory meatus and tracked upwards and forwards un the temporal muscle. There is a second bony sinus at tip of the mastoid process, so that it must also have oper into the muscles of the neck. Some suppose that circular smooth opening is a primitive piece of cran surgery, to drain the abscess and perhaps a deeper tempo sphenoidal one. Elliot Smith has suggested that the ma may have been caused by gnawing insects, such as co roaches, which, he states, often attack the bones of Egypt mummies; such an explanation, however, is not sa factory here, and cannot possibly be applied to the smo round hole in the squamous bone. Prehistoric cran trephining is a large subject; it was a common pract among some neolithic peoples and among the ancient tri of Peru. I would refer anyone interested in this matter Dr. Wilson Parry's [8] instructive address to the Lister Society of King's College Hospital, 1923. There is excellent exhibit of ancient skulls with trephine holes in Hunterian Museum of the Royal College of Surgeons England, and alongside has been placed the skull of first patient on which a successful operation for removal of a cerebral tumour was done. It was perform by Sir Rickman Godlee in 1884, after being diagnosed localised by Dr. Hughes Bennett.

Another well-known prehistoric skeleton showing pat logical changes is the Chancelade skeleton [9] in the muse

* Being the presidential address to the Liverpool Medical Institution, delivered on Oct. 13th, 1927.

t Perigeaux, from the Magdalenian deposits in the ordogne, probably about 10,000 years old. It shows an xtensive fracture of the right temporal bone which has ompletely healed. It also shows well-marked evidence of steo-arthritis in the shoulder-joints and dorsal spinal rticulations.

The Work of Marc Ruffer.

The subject of prehistoric human pathology was first eriously investigated by Sir Marc Armand Ruffer, who oined the term palæopathology. He was the first director f the British Institute of Preventive Medicine. While nvestigating the new antidiphtheritic serum in 1891 he ontracted the disease and suffered severely from paralytic equelæ; giving up his post, he went to Egypt to convalesce, nd settled there. He was the first to investigate the icroscopic structure of mummies, and he invented special ethods for cutting and staining this difficult material. fter his death his papers and studies were edited and ublished in 1921 by R. L. Moodie, professor of anatomy at he Illinois University of Chicago, under the title of "Studies n the Palæopathology of Egypt." The preface is a mine of nteresting facts. Ruffer was indebted for much of his naterial to Reisner, Elliot Smith, Wood-Jones, and Derry, ho had been assisting in an archæological survey, which the overnment of Egypt carried out in 1907, of that part of ubia about to be submerged by the Assouan Dam. The eport [18] drawn up by these gentlemen was published by he Egyptian Government in a series of bulletins containing nuch information on the pathology of the ancient population f that country. Some of the best specimens from this rvey form an interesting exhibit in the Nubian collection f the Hunterian Museum, and are well worth inspection; hey were shortly catalogued and described by Shattock, ho on one occasion exhibited before the Royal Society of edicine sections of the aorta of Meneptah, the reputed haraoh of the Hebrew Exodus, who died 1215 B.C.; the ction showed typical senile calcification, the elastic mellæ being perfectly preserved, and the interlamellar naterial thickly strewn with calcium phosphate.

One of the most interesting discoveries of Ruffer was the monstration of typical calcified eggs of *Bilharzia hæmatobia* the tubules of the kidney in two mummies of the XXth nasty; the rectum and bladder, however, were not fficiently preserved to show the condition. This form of histosomiasis with which now, according to recent authoriies, 60 per cent. of the inhabitants of Egypt are infected, as therefore present at least 1000 B.C.

One of the plates in this book shows an excellent example Pott's disease of the spine, with a well-marked psoas bscess from the mummy of a priest of Ammon of the XIst dynasty. Ruffer also figures a vesicular rash from he skin of a mummy of 1200 B.C. The distribution of the sh corresponds with that of small-pox, and the structure ows the dome-shaped vesicles in the prickle cell layers. he high-power photographs of the skin show a large number bacilli stained Gram-eosin. These presumably were condary, but this shows very well the preservation of ese organisms for many centuries.

A statuette, now in Cairo Museum, of an important court ficial, "head of the wardrobe," who lived in the Vth nasty, 2700 B.C., is a typical achondroplastic dwarf with e usual disproportion between the trunk and limbs. These arfs seem to have been fairly common in ancient Egypt; veral are figured on the monuments. The *Times* of pril 7th, 1927, describes the effigy of an individual called nab, 2900 B.C., recently discovered in a Mastaba tomb, hich, from the description, was another example of hondroplasia. Pigmies from Central Africa were also nployed by the ancient Egyptians, and any fantastic or normal dwarf was evidently highly prized for household rvice. Rickets and talipes are among the varieties figured. steitis deformans, or osteo-arthritis, occurred widely nong the early Egyptians; this is emphasised by Elliot nith and Wood-Jones in the Nubian Survey Report.[18] seems to have affected especially the spinal column. ere is a well-marked example (Flinders Petrie) of the ondylitic variety in an individual of the name of Nefermat, whom the whole spinal column, from the fourth cervical rtebra to the coccyx, has been converted by the disease o a rigid column; it has subsequently been broken into veral pieces. It was found in one of the early Mastaba mbs of the IIIrd dynasty about 3200 B.C., long before the e of the Pyramid builders.

From the catacombs of Alexandria, in the time of the man occupation, A.D. 250, Ruffer obtained an interesting ecimen of pelvic tumour. The ischium was greatly ckened and rounded and, on section, consisted of mpact dense bone with numerous cavities. He says it is arly not due to any of the infective agents, such as bercle or syphilis. He considers it to be an osteosarcoma, which we have only the bony remains left.

We may take it that there never was a time when mankind was not cursed by toothache. Dental caries is found in the early and late Stone Ages and was very common in the Bronze Age in Europe. Ruffer figures many cases from early dynastic times in Egypt.

Syphilis.

It is an interesting fact that no evidence of syphilis has been found amongst ancient Egyptian remains, and the origin of this disease is still shrouded in mystery.[10] At a special discussion on syphilis at the Royal Society of Medicine in 1912 [11] Norman Moore pointed out that the disease could not have been recognised in Roman times, for that keen observer Galen, with his careful descriptions of nervous disease, is quite silent as to the characteristics of locomotor ataxy or general paralysis of the insane. On the other hand, Voberg, of Stuttgart,[12] recognised the stigmata of the disease in certain early historical personages, such as Augustus Cæsar and Socrates. All the busts of the great philosopher show a marked retroussé nose with a defective bridge. The statuette recently discovered in Alexandria, dating from the fourth century B.C., is the earliest known representation of the sage, and must have been almost contemporaneous; it may, indeed, have been made from life. It has just been acquired by the British Museum [20] and demonstrates the condition very clearly.

Some have tried to find evidence of lues in the descriptions of disease in Holy Writ, such as the Emerods with which the Philistines were afflicted in their secret parts (I. Samuel, V. and VI.), but Adami [3] in his Croonian lectures attributes these lesions, and no doubt rightly, to bubonic plague.

It has generally been supposed that syphilis was not recognised in Europe until after the return of the sailors of Christopher Columbus from the discovery of America in 1493, the inference being that they brought it from that country. The well-known American anthropologist, Hrdlicka, of Washington,[19] on the other hand, in his extensive studies of hundreds of pre-Columbian skeletons in that country, states that he has never come across any condition suggestive of syphilis, while skeletons of American Indians of post-Columbian date show that the disease wrought fearful havoc amongst them. But this year Prof. Hayhurst,[13] of Ohio University, quotes the radiographic work of Dr. Means on the skeletons of the Mound builders of Ohio. These Mounds, or Tumuli, are now recognised as offshoots of the Aztec, and the still earlier Toltec cultures of Mexico, which in its turn was derived from the ancient Maya civilisation of Central America. Dr. Means states that he found "gross evidence of syphilis in these skeletons; they presented varying degrees of involvement, from simple periosteal thickening and roughening on the crests of the tibiæ to thickened ivory-like bone invading the medullary canals, with gumma formation."

Disease as a Factor in Evolution.

Long ago Lyell [14] laid down the important geological principle that changes in the past are best interpreted by similar processes seen at work in the present. Thus Osborn [2] points out how vast herds of wild buffalo were exterminated in South Africa between 1890 and 1893 by rinderpest, which also killed off almost completely the wildebeeste or gnu and the giraffe. Moreover, fly-borne diseases such as surra have been powerful agents in the destruction of the equidæ, just as the *Trypanosoma brucei*, carried by *Glossina morsitans*, causes the fatal nagana in domesticated horses and cattle. Several species of tsetse-flies of the genus glossina have been found by T. D. A. Cockerell [5] in a fossil state in the florissant shales of Colorado, which are of Oligocene (mid-Tertiary) age. Whether these flies could carry trypanosomes we do not know, but at this part of the tertiary period horses were evolving very rapidly, and epidemic forms of nagana might have had marked influence on their extinction or survival. It is curious that horses are found in America up to the end of the Tertiary period, but after that they disappear completely, and had to be reintroduced by man when the country was first colonised.[15]

Modern biologists and palæontologists lay great stress on persistence as a characteristic of the evolution of certain lineages. The most frequently quoted example of this is the brachiopod lingula, whose fossil shells are found in the ancient Cambrian deposits, and which yet has persisted through all the subsequent epochs, and lives to-day on the shores of our tropical seas. Its form has scarcely varied during these æons of time and has withstood all the stresses and strains of environmental change, while all its collaterals have perished, or spent themselves in varying to suit their changing circumstances. The modern exponent of evolutionary methods talks of an inherent persistence or invariability, in such a lineage, so that energy is not used up in starting new phylæ, but is only employed in carrying on the main stem. Lang [16] gives us his idea of one aspect of the evolutionary process, thus: "Our supposed primitive organism then, tense with potentiality, curbed by inhibition,

periodically breaking out as inhibition, is removed in bursts of evolution along similar and definite lines, is a very different creature from the passive organism of the orthodox Darwinian, which conveniently varies in all directions, and allows natural selection to determine the course of its evolution." It is true that Dr. Bather,[17] the eminent palæontologist of the Natural History Museum, South Kensington, has stated that Lang has gone too far in postulating such "an insistent tendency in living organisms, and by putting the environmental factor so much in the background." But those of us who are always coming in contact with pathological phenomena must realise that a powerful element in this struggle is the acquirement of, or failure to acquire, an immunity. Modern bacteriology has taught us that this does occur, and examples of it are seen in everyday life among man and animals.

The fall of classical Greece and the triumph of Alexander of Macedon is now believed by some [21] to have been largely due to the crippling of the inhabitants of that country by malaria. It has even been suggested that the invasion of Eastern Europe by the Turkish hordes in 1358 [22] was the result of the devastation and partial extinction of the populace in the previous few years by the Black Death or Plague; and we all know how cholera, measles, and syphilis have played similar parts in different areas. In the same way the large vertebrate fauna have been more or less decimated at times by rinderpest and other zymotic diseases. Osborn,[2] discussing the close parallel between the present fauna of Central Africa and that of North America in Tertiary times, says: "From these recent discoveries it appears that immunity from disease is one of the most important features of animal adaptation to environment, and that, conversely, non-immunity has probably been one of the most potent causes of diminution and extinction."

One cannot but feel certain that disease in its various manifestations has played a much greater part in the evolution of the different forms of life in this world than the biologists have ever realised.

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PRISON BREAKERS.[1]

THERE is always something of psychological interest about prison breakers, for their deeds are committed by individuals who show that the impulse to infringe social barriers holds good when they find themselves confined in a material sense. The popular story of Jack Sheppard, when inquired into, seems to be really true; indeed, Harrison Ainsworth has hardly done justice to the ingenuity with which his hero escaped from Newgate; while Jack Sheppard's similarity in psychological make-up to Haggart, the famous Scotch prison breaker, is remarkable, for in each case these resourceful rogues appear to have been mainly led to crime through vanity. Perhaps more widely known than either as one for whom locks and bars have no terrors is Baron Trenck, and his exciting adventures form the longest essay in the book. Except perhaps Latude and Casanova, mention of whom the author omits because their exploits are over familiar, Trenck has the widest fame for prison-breaking, and his adventures are certainly better documented than those of Casanova. Mr. Philip has produced a very readable book.

[1] The Prison Breakers. By Alban M. Phillip. London: Philip Allan and Co. 1927. Pp. 282. 10*s.* 6*d.*

A NEW MEDICAL JOURNAL IN INDIA.

WE have received a copy of the first issue of the *Si Medical Journal*, the quarterly production of the Si Medical Union, edited by Dr G. F. Rodrigues, who held number of resident appointments in London hospita ten years ago. The issue contains a series of short articl on keratodermia blenorrhagica, furunculosis of the fa cancer of the breast, and intussusception. The first-nam disease is one of the rarest in the whole of dermatologi literature and the case described is not very convincir The suggestion to treat scabies in man by the o administration of sulphur deserves a trial elsewhere, for cures are claimed. Apart from these scientific papers, number of highly controversial political matters are touch upon, and the editorial article makes no attempt to defi the policy of the journal. The publisher is Dr H. J. Wan at the Daily Gazette Press, Karachi. and the annual su scription (inland) Rs.2.0.0 and (foreign) Rs.2.8.0, post fr

HONOURS TO MENTAL NURSES.

IN our annotation on the New Year Honours whi appeared in THE LANCET of Jan. 7th (Pp. 35) while menti ing the appointment of Miss M. M. Thorburn, matron of t London County Mental Hospital, Horton, we omitted mention the name of Miss Jane Mottershead, senior assista matron to the Cheshire County Mental Hospital at Macc field, who was appointed to be a Member of the Civil Divisi of the Order of the British Empire. The mental nurse recei little enough recognition of her devoted service in a v exacting branch of the nursing profession, and it is peculia encouraging for her to find the value of her work recogni in this way. Among the Officers of the same Order appe the name of Mrs Isabel Brogden Carter, a member of Mental Deficiency Committee in the same county.

A BOOK OF DAYS.

IN "Roses, Marjoram and Nettles," (London: Meth and Co. Ltd. Pp. 388. 5*s.*) Miss Adelaide L. J. Gosset tried to give her readers glimpses into "the mysteri teeming life of long ago." She has selected men and wom belonging to almost every profession—authors, engine lawyers, generals, architects, statesmen, inventors—giv quotations which throw them and their work into rel Edward Jenner is amongst the few medical men includ with a quotation from Isaak Walton which runs: "Jen pleaded with Napoleon on behalf of some British prison and Napoleon was on the brink of refusing to release the when Josephine whispered the name of 'Jenner,' upon wh Napoleon said, 'There is nothing we can refuse that m Jenner was triumphant." Certain days are reserved recalling events such as the passing of the Bank Holi Act, the opening of the London docks, All Fool's Day, Founding of the Royal Society, the chartering of the Z logical Society of London. The quotations are extrem varied and many of them quite entertaining.

NEW PREPARATIONS.

Messrs. Burroughs Wellcome and Co., London, have s us "*Wellcome*" *Antipneumococcus Serum, Type I.* Ser protecting against infection with Pneumococcus, Type in laboratory tests is now widely used in the treatment pneumonia. Such a serum is prepared at the "Wellcom Physiological Research Laboratories. Antipneumococ serum is tested against cultures of pneumococci of s virulence that 0·000 001 c.cm. of an 18-hour culture will a mouse. A dose of 0·2 c.cm. of "Wellcome" brand A pneumococcus Serum, Type I., will protect a mouse agai 0·1 c.cm. of the culture—i.e., 100,000 fatal doses. It thus reasonable to expect favourable clinical resu "Wellcome" brand Antipneumococcus Serum, Type I. supplied in phials containing 25 c.cm.

Bismogenol, which is recommended for use in vari stages of syphilis, is prepared by Messrs. E. Tosse and of Hamburg, and imported by Messrs. Boxall, Smith Co., 163A, Strand, London, W.C. It is an example modern bismuth therapy, and contains 60 per cent. bismuth combined with oxybenzoic acid. The contributi to the German medical press on the non-toxicity successful action of the preparation are numerous, an good many of the reports either emanate from hospitals have been made to general or special medical societ The technique of the injection is the same as that for insoluble mercury salts; it is recommended that 1 c. should be injected every third, fourth, or fifth day into upper external quadrant of the gluteal muscle, up 25 injections being given, though the dose can be m larger without danger. It is stated in the medical obser tions that pain does not occur, so that if the syphil symptoms appear to the doctor to warrant a more dra course of administration there will not be any distress resistance from the patient.

THE temporary address of the National Association for Prevention of Tuberculosis is 1, Gordon-sq., London, W.C.

A Dissertation
ON
DAMAGES TO BONES AND REPUTATIONS.*

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"Bones are supposed to be filled with red or yellow marrow; in reality they are full of black ingratitude."
C. B. LOCKWOOD.

THE advance of specialisation in medical practice has not yet taken the diagnosis and treatment of fractures out of the hands of the general practitioner. Although the majority of cases are eventually treated in hospital, yet a very large number must always be seen by doctors in general practice. And now that most country districts are provided with cottage hospitals every type of fracture may come there for diagnosis and treatment by medical men who must perforce undertake this responsibility.

Several causes have combined to make this responsibility more onerous in recent years. The general advance of surgical methods, in diagnosis and technique, the advent of radiography with the possibility of the layman being able to see the broken bone for himself, and the requirements of the Workmen's Compensation Acts are the chief of these causes. And always there looms the possible menace of civil litigation by or on behalf of a dissatisfied patient, in which it is sought to punish the doctor for alleged negligence or malpraxis. A fracture so often involves not only a damage to a bone, but to the reputation of the doctor, that it seems worth while to consider this subject and to discuss the kind of fracture which causes difficulties, the nature of the resulting disability, and, above all, how to seek the paths of safety for the patient and of security for the doctor.

ONE HUNDRED CONSECUTIVE CONSULTATION CASES.

I think it will make the consideration more practical if I give a summary of the last 100 cases in which my opinion has been sought at a long interval after the accident—that is to say, cases in which primary treatment has been carried out but has proved unsatisfactory. Here, then, are the bare figures of the cases classified in eight groups.

Humerus (excluding lower end)	7	Femur (shaft)	12
Elbow	15	Tibia and fibula (shafts)	22
Radius and ulna (shafts)	17	Ankle	11
Colles	7		
Hip (i.e., neck of femur)	9		100

This list somewhat surprised me in regard to two notable omissions—namely, fractures of the clavicle or of the knee-joint, that is of the lower end of the femur. I think that clavicle fractures are now treated very much better than they used to be, because it is recognised that mobility of the shoulder must be maintained, whilst restricting apparatus, other than slings, which support the arm and keep the shoulder back are superfluous. The knee fractures are not in this list for quite another reason, and that is that everybody, doctors and patients, are frightened of these injuries, and realising from the outset that they are likely to give bad results, they are sent direct to hospital or to a consultant. Whilst admitting the gravity of knee fractures I do not think that they ought to cause undue anxiety, as they readily yield to traction methods or to open operation. They certainly do not alarm me as much as the corresponding fractures of the elbow-joint.

Humerus (excluding the lower end).—There were seven of these cases, in four of which the upper end was fractured and in three the shaft. In fractures of the upper end, whether of the head, tuberosities or neck, the two points of importance are to make an accurate diagnosis by the X rays and to maintain the limb in full abduction until early union has taken place. X rays are necessary, not so much to make the diagnosis—although without them an impacted fracture may be overlooked—as to ascertain details of the shape and direction of the break, the presence of comminution or dislocation. If the head is dislocated and the neck broken then the open operation is the only reasonable treatment, but in all other cases traction in full abduction by means of a Thomas straight splint should be the first method tried, whilst impaction by open operation is used for cases not reduced by the abduction. All these shoulder fractures should be kept up in an abduction splint after reduction has been effected, and later on one of the light wire patterns which maintain a position of bent elbow, as high as the shoulder and hand nearly opposite the face. This is the best means of preventing stiff shoulder with atrophy of the deltoid, which is the usual disability following a badly treated case.

Of the fractures of the shaft, two were cases of non-union with false joints, and one was merely a condition of delayed union associated with defective plating. Of non-union of fractures of the humerus I will content myself with saying that I think the condition might often be prevented by putting up the arm in an ambulatory abduction splint which is the only way of securing immobilisation and preventing the drag of the arm. When once a false joint has been established nothing but a reconstructive operation is of any avail, and this operation is one of great difficulty, involving step cutting of the bone-ends and possibly bone-grafting.

Elbow.—The 15 cases included two fractures of the olecranon which had been overlooked, with subsequent stretching of the fibrous union and one a rare condition of loose bodies, one of which was certainly a broken off fragment of the articular end of the humerus. The remaining 12 were all the typical broken lower end of the humerus in children or young adults, which in all these cases resulted in a more or less stiff elbow, and in three led in addition to that most dreaded complication, ischæmic contracture.

From the point of view of guaranteeing a good functional result, I think the fractured elbow in a child is the most difficult case which a surgeon may be called upon to treat, whether he is a country doctor or an experienced specialist. The simplicity or complexity of the fracture of the humerus is no certain guide to prognosis. One of my patients who developed actual ankylosis had a simple separation of one condyle which united in perfect position. Two cases were put up in full flexion, three in moderate flexion, seven at right angles. This, so far as it goes, shows that the more flexion can be secured the less is the chance of a stiff elbow. Probably the most certain cause of stiffness of the elbow is injudicious massage and forced movement. The ideal treatment consists in reduction under an anæsthetic, flexion of the arm, and no forced movements. Only gentle massage is used, and the arm is left alone for a week, and after that is allowed to drop by its own weight once a day as far as it will without pain and then replaced in full flexion. Forced painful movements within a few days of the fracture, and deep massage, are responsible for most of the stiff elbows in which the reduction of the fracture has been complete. Open operation gives no assurance of success as far as the future mobility of the elbow is concerned. In regard to displacement, the best result will follow manipulative reduction, and open operation should only be used when manipulation has failed, and particularly when one of the condyles is displaced. Open operation should be of the simplest possible character, a mere impaction or fixation of a condyle by means of a fine steel nail. Elaborate plating or

* The substance of this paper was delivered in the form of two addresses, the first to the Wiltshire Division of the British Medical Association at Chippenham, and the second to the Newport Medical Society.

wiring may restore a good shape to the bone, but will almost certainly leave a stiff joint.

Ischæmic paralysis or, as it used to be called, Volkmann's contracture, is a tragedy both for the patient and the doctor. In a bad case the whole forearm becomes stunted in growth, the muscles atrophy to fibrous cords, and the fingers are contracted into a claw shape. In cases of moderate severity great amelioration can be effected by careful treatment, carried out for one or two years, but the patient usually remains more or less crippled. It is due to a blocking of the circulation, caused primarily by an effusion of blood, and sometimes secondarily by tight bandaging. At one time, when the condition was first described, it was thought that it only resulted from tight bandaging over narrow splints. We know now that it may also arise in cases which are not splinted at all, but only put up in acute flexion. In three cases of the present series all were manipulated under an anæsthetic. One was bandaged on to an angular splint, one was fixed by a plaster bandage, and one was bandaged in full flexion. The important practical points are the length of the time which has elapsed since the fracture, the degree of swelling, and, above all, the condition of the pulse. In all doubtful cases with much swelling and a pulse definitely smaller on the affected side, it is much wiser to do nothing more than lay the arm on a pillow with the elbow at a right angle until the swelling has gone down and the pulse has returned. I think that text-books are not explicit enough on this point—namely, that full flexion of the elbow can be just as dangerous as a tight bandage.

Fractures of the Radius and Ulna Shafts (17 cases).—In most of these cases (11) the serious trouble which called for consultation was the displacement of the shaft of the radius towards the ulna, so that the hand deviated towards the thumb and supination was lost. This sagging inwards of the radial fragment is very difficult to prevent, even if the case is seen within a few hours of the accident. I know of no splint or traction appliance which effectively controls the tendency of the radius to fall towards the ulna. Apart from operation, the one chance of success lies in very careful reduction under the guidance of the X ray screen. In this way the radial fragments can be made to impact, and then they will hold. If the case is seen a few days or more after the accident, and if then the lower radial fragment is inclined towards the ulna, it is much better to operate than to temporise further with splints or manipulation. Generally the operation is very simple, consisting in mere impaction of the radial fragments, using an intramedullary peg only when the impacted fragments refuse to remain in contact. After reduction and impaction of the fracture, the arm is put up with the elbow at right angles, midway between supination and pronation, or in full supination. Of the remaining cases in this group, five were fractures in which some form of operation had had a bad result, and in one there was non-union of the ulna. It will simplify this paper if I defer consideration of these for the present.

Colles's Fracture (7 cases).—In one of these the fracture had been compound, with severe sepsis. In all the remaining six, deformity with loss of function had resulted from incomplete reduction of the original displacement. This point is therefore one of great importance—if the displacement is really and fully reduced then there is comparatively little fear of a bad result. The cases likely to lead to trouble are those in which the deformity is not extreme, being hidden by swelling or disguised by splinting. In early cases there ought not to be any real difficulty in correcting the deformity under an anæsthetic. In later cases a wrench may be used. Of the six cases under present consideration, one gave a satisfactory result after late reduction (six weeks), one required an open reduction (two months after accident), and the remaining four either refused further treatment or were not considered suitable for such.

Neck of Femur (9 cases).—These were all fractures of the true neck of the femur, or, as they used to be called, "intracapsular." In one case the patient had never been laid up, but persistent pain required investigation, and the X rays revealed an impacted fracture six months after the injury. No special treatment was required at this stage, and apart from humiliation to the doctor and the risk of legal action no great harm was done. In one case the patient was a girl of 14, who became lame after a trivial accident and eight weeks later the X ray showed that the epiphysis of the head of the femur had slipped so as to cause well-marked coxa vara. This was corrected and pegged by an open operation, and a year later the form and function of the hip were perfect. All the other seven cases were instances of non-union after periods varying from a few months to two years. It is not sufficiently recognised that these fractures do not unite when left alone or when treated by a straight splint or by simple traction. If a fracture is through the neck of the femur well above the intertrocanteric line, it will never unite unless it is impacted either by the original accident or by artificial means. And, further, the fractures which appear to be impacted—i.e., are in good position with no displacement—are very likely to become disunited unless very special precautions are taken. Two of my cases were instances of this. In one the patient was a boy of 16, and the other a man of 55. In each it was taken for granted that the impacted fracture was united long before union had taken place, active and passive movements were encouraged and full massage employed, and in both the fracture became disunited and an operation was required. An impacted fracture of the femoral neck should be treated by fixed abduction for six weeks, and then walking calliper for six months, otherwise there is a big risk of coxa vara or non-union.

It should therefore be laid down as a definite rule that no fracture of the true neck of the femur will ever unite unless it is forcibly impacted and held in this impaction for at least six months. On the other hand, it is equally true that in the great majority of cases this treatment of impaction will bring about union. It is quite unjustifiable to abandon such a case to the misery of painful lameness, even if the patient is of advanced years. There are two effective methods of treatment. In one the leg is forcibly pulled down under an anæsthetic, and then forced into a position of full abduction and slight internal rotation so as to force the broken surfaces together. This position is maintained by a plaster case extending from the lower part of the chest to the foot. The application and after-care of such a plaster splint can only be undertaken by those accustomed to this work. But in all cases of patients of active habit and in good health, and especially when three months or more have elapsed since the accident, I think it much more satisfactory to bring about impaction and to fix it by means of an open operation, driving a bone peg through the neck of the femur. In the seven cases under present consideration only one was treated by plaster abduction, and that was a stout and alcoholic woman who refused operation. The result was fairly satisfactory, being a close fibrous union with some lameness, but no pain. The other six cases were all pegged, and in all bony union resulted. In one of these cases, a woman of 35, the non-union had persisted for two years; but, nevertheless, perfect union resulted from the operation so that a year after she could walk with neither pain nor lameness and the X rays show perfect restoration of the femoral neck.

Shaft of the Femur (12 cases).—In one of these the chief trouble was caused by sloughing of the skin over the foot and heel due to traction applied to the foot. In one a compound fracture had been plated with the usual result of sepsis, necrosis, and malunion. In six there was gross malunion with angulation and shortening, and in four there was non-union with pseudarthrosis or a fibrous joint. In two of the cases of non-union and in one of malunion the fracture had been treated by primary plating. In one of these the plate and screws had been removed

ecause of sinus-formation, and in the others the late and screws remained in position as loose foreign odies. Time and space do not permit of an adequate liscussion of this group of cases, and I must content nyself with laying down a few general principles.

First, as to the best method of securing good union f the femur—that is, a sound healing with full ength and good position. I am firmly convinced that he routine method should be that of adequate raction. It is not a question of using So-and-So's plint; but it does mean that the femur must be ulled upon by a traction force which will over-educe the displacement with half an inch or more o spare, and which can be relied upon to maintain his extension for at least four weeks. In some atients, including all children, this can be done by dhesive plaster and a Thomas splint. But in muscular dults, and especially when the case comes for treat-nent a week or more after the accident, pin-traction s much more satisfactory. It is less painful to the atient and much more certain in its results. Ice-tong allipers or transfixion pins will both give an efficient old on the bone, but I must confess I greatly prefer he transfixion pin. I do not hesitate to use as much s 60 lb. traction in those cases where there is much hortening and of old standing. The weight is applied y two pulley blocks. Directly the over-length has een obtained the weight is reduced to 40, 30, or 15 lb. he one crucial test of the efficiency of any traction ethod should be that the broken bone is really ulled out to a little more than its normal length ithin a few days of the application of the traction. nything short of this is inefficient and is likely to ive a poor result. But if this test is carried out, hen there may be perfect assurance that neither alunion nor non-union will result. Furthermore, the nion of the bone will be rapid and firm, much more than after the most perfect plating. In regard to ne treatment of the six cases of malunion, in three ases several years had elapsed since the fracture, ne bone had undergone reconstruction, and no opera-on was advised. In the other three osteotomy or e-fracture was done and the cases treated by pin-raction. In all these full length and good union as obtained. The four cases of non-union were all uccessfully treated by reconstructive operations. In ne, an oblique fracture, it was possible to refresh ne fracture and to unite by two Parham's bands. n the other three the bone-ends were reshaped and nited by means of a pair of bone plates bolted gether on either side of the fracture. In all these nion occurred, but the healing process was slow, aking 8 to 14 months before the bone was strong ough to bear the body-weight.

Shafts of the Tibia and Fibula (22 cases).—These are sily classified as follows:—

alunion	11	Delayed union	5
on-union	5	Compound fracture ..	1

nine of the cases of malunion there was marked gulation, which threw the ankle-joint out of line, using some degree of valgoid deformity. In the maining two cases where there was 1 or 1½ inches shortening but no angulation, the foot was affected, and therefore there was comparatively tle disability, and as a year or more had elapsed nce the accident in both these cases no further eatment except a slightly raised boot was advised. ought not to be difficult to put up a tibia so as to oid angulation. The mistake usually arises from e use of some type of box-splint or plaster-of-Paris which the true position of the bone is concealed. the radiogram shows marked over-riding, then uction should be undertaken without delay. Efficient uction can seldom be applied by adhesive plaster, d it is essential to use an ice-tongs calliper or a all pin through the os calcis. When full length or erlength has been secured, it is comparatively easy correct any angulation, and it is wise to keep the ot inverted and at a right angle all the time. Within veek of achieving a good position of the fracture, leg may be put in a plaster case which reaches from the balls of the toes to the tubercle of the tibia. The plaster is applied with the transfixion pin in position, full traction being maintained all the time, and the pin is only removed when the plaster is set. A week or two later the plaster is cut into two halves which are removed for daily massage. In the long spiral fracture, even efficient traction will often fail to make good reduction, and it is in such cases that open operation is strongly indicated and may be relied upon to give rapid union. From the point of view of simplicity and mechanical efficiency some form of cerclage is much more satisfactory than plating.

There were five cases of non-union, varying from one to four years after the accident. In no less than three of these a plating operation had been done, and the failure of such operation must be regarded as a definite cause of non-union. In the first place, there is a wide exposure of the bone and a partial stripping of its external vascular supply. Then, if plates and screws do not hold, these lie as loose foreign bodies across the fracture and prohibit callus union. When at last the plates and screws are taken out, the bone has usually become indolent, sclerosed, and incapable of healing. In these three cases (non-union after plating) the final treatment was by a massive graft taken from the opposite tibia and in all union resulted. Of the other two cases of non-union where the condition was due simply to want of apposition between the fragments, success was attained in one by refreshing and shaping the bone ends, impacting them together; but in the other case this treatment was followed by secondary hæmorrhage, necessitating amputation.

In five cases the trouble was merely that of delayed union. Any case of fractured tibia in which the fragments of bone are in good contact and alignment, but where union is slow, may be treated with perfect confidence by walking exercises. The leg is supported by a pair of short irons from the heel of the shoe to the tubercle of the tibia, and the patient encouraged to bear weight upon the foot. In all these five cases this treatment caused ultimate union, though very slowly. It is very important to bear in mind that if union does not occur in spite of good contact then there must be some underlying cause, vascular or cellular, and that this same cause will be very unfavourable for any open operation.

In one case the fracture had been compound and had been plated. Then sepsis had compelled the removal of the plate. The doctor suggested and the patient begged for amputation, but I am glad to say that long and patient traction with suitable toilette of the wound, and occasionally removal of sequestra, eventually led to a sound union and useful leg.

Ankle (11 cases).—In eight of these a bad result had followed incomplete reduction of the fracture. Valgoid deformity of the foot with a painful stiff ankle was the general result. As in the similar fracture at the wrist-joint the first and most important essential to success is full and complete reduction. This ought to be checked by radiography, because it is difficult to be certain of the relative position of the bones when they are covered by swollen soft parts. The foot must be brought forward, dorsiflexed, and inverted, and when this has been done a close scrutiny is taken of the bones by the X rays to see whether there is any splintering of the posterior surface of the tibia or fracturing of the calcaneum or astragalus or separation of the tibia from the fibula. In some cases I think that satisfactory reduction has actually been made by pulling the foot forward, and then this position is lost by the leg being placed on a padded back splint in which a slot is left for the heel and tendo Achillis. Into this slot the foot slips backwards. A very good and easy method is to place the leg and foot in a piece of stockinette, the upper end of which is fixed by adhesive plaster above the knee. The foot is pulled forward and wrenched into an over-corrected position and then suspended to the bars of a bed cradle, hanging the limb by the toe-piece of the

stocking in such a line as to preserve dorsiflexion and inversion.

In the eight actual cases of malunion under consideration, a fair degree of restoration of function was achieved in five by manipulation or by osteotomy. In one case (originally compound) amputation was advised. One refused treatment, and in one an open operation produced a result which was of doubtful benefit. In three cases of ankle fracture the bones had united in good position, but there had resulted in the one a stiff ankle and in two a dropped foot, with shortening of the tendo Achillis. In all these improvement was attained by wrenching under an anæsthetic or by lengthening of the tendon.

General Principles.

Before leaving this part of my subject I should like to emphasise a few general principles.

The importance of a critical examination of the fracture within a few days of its being put up.—It is, of course, essential to recognise the existence and nature of the fracture before treatment, but granting that this has been done, and treatment by splinting, posture, or traction carried out, then it is equally necessary to get absolute proof within the first week or ten days that the bones are in good contact and correct alignment. It is the failure to get this proof that underlies most cases of bad result. Typical cases are those of fracture of the upper end of the humerus, of the femur, or of the leg bones, where the patient is quite comfortable and to the superficial observer everything looks all right. But the arm comfortably bandaged against the chest or the leg slung up in a splint or perhaps encased in plaster really presents to the X rays gross malposition, and if this is discovered within the first week no very great harm has been done, because it is not too late to bring about correction; but it is wrong to wait for a month or six weeks because in this time malunion may occur or non-union may be established, and to cure either of these will not only require a much more difficult operation, but the patient has a just grievance, whilst the doctor is involved in discredit.

Danger of inefficient plating operations.—In 9 per cent. of the whole series, or about 17 per cent. of the fractures of the shafts of the long bones, the bad result followed from a plating operation in which the plate and screws failed to hold and had to be removed. In most of these there was no evidence of sepsis, and the plate had remained for a long period loose in the tissues, which had healed over it. Either the plate was too short to afford adequate internal splinting, or else external splinting had been neglected, and in either case the result was malunion or non-union. It is very unfortunate that so many practitioners still regard the plating of fractures as the method of choice in all cases where malposition persists. In the arm bones simple operation of impaction, followed by adequate splinting, or, in the leg bones, efficient traction, can be relied upon to give much better and more certain results than plating, and these methods are not only much easier but are devoid of the immediate and remote dangers which are involved by plating.

Dangers of plating compound fractures.—It would seem quite superfluous to say anything on this subject; yet open fractures are still being plated and lives and limbs endangered thereby. When a wounded man is brought in with a broken bone protruding through the skin or seen in the depth of a ragged wound, it would appear that this condition exercises an irresistible influence on some surgeons, who, in spite of all that has been said to the contrary, feel that they cannot be content with a wound toilet unless they also plate the bone. In the days of the war the operation was tried again and again, usually with disastrous results, and the method was killed by its own badness. In civil life any one medical man may be tempted once; if he yields to this temptation it is not likely he will do so a second time. But I would plead that he should not yield even this once, because if he does he will probably bring great danger upon his patient and great trouble to himself. Activ sepsis in the wound requiring the removal of the plat is the least of these dangers. Extensive necros causing shortening or non-union is the usual resul whilst other cases may end in amputation or deat The subtlety of the temptation lies in the fact tha every now and then the operative adventure of platin an open fracture succeeds, and the adventurer probabl publishes his case, perhaps attributing his succe to the use of some new antiseptic. But while a sing success is quite honestly published, 99 dismal failur go unrecorded. Any open fracture which can b safely plated should be converted into a close fracture and the soft parts soundly healed fir before the bone operation is undertaken. But in th great majority of the cases if efficient immobilisatio and traction has been carried out during the waitin period, good union will have occurred before the sa time for plating has arrived.

The essential simplicity of fracture treatment.—Th very essence of successful treatment lies, I believ in simplicity. The bones are displaced by the origin violence, by gravity, and by the pull of the muscle Efficient traction in the axis of the limb must be ma as the first and necessary act in reduction, and eve surgeon should be master of some such method efficient traction. This may be by adhesive applianc tied to fixed apparatus or by a mobile weight acti over a pulley and holding by means of an ice-to or transfixion pin. But the traction must be efficie as judged by the length of the limb, the radiograph appearance of reduction, and the permanence of t result. If this standard of efficiency is reached, th very few cases will require operative treatment, a I believe that the more experienced a man becom the fewer cases he will require to operate upo Certainty and celerity of recovery may justify open operation in some cases—e.g., an inward displaced shaft of the radius, a separated epicondy a fractured neck of the femur, a displaced femo condyle, a long spiral fracture of the tibia, or separated malleolous. In such cases usually t operation need only be of a very simple charact consisting in open reduction and impaction w occasional pegging or cerclage.

Fifty Consecutive Legal Cases.

The collection of reports of cases in which le proceedings have been threatened or action taken more difficult than that of my own consultations a therefore, I have had to be content with only Grouping the cases according to the bones involv we have the following list:—

Clavicle	1	Femur neck	1
Shoulder	9	Femur shaft	3
Elbow	3	Patella	1
Radius and ulna	4	Tibia	5
Wrist	5	Ankle	5
Digits	3		

Clavicle.—The accident and the injury were o straightforward character, and no doubt existed as to the diagnosis. For this reason no radiograms d been taken. The case passed into the hands of another practitioner, who considered that there was evidence of pressure upon the brachial plexus b a deep splinter of bone. He operated upon the fract and united the bone by means of a plate. The doc who first saw the case was sued for negligence, it was useless for him to protest that there had b no evidence of comminution or of special displacem of the bone, because he had no radiograms at his disposal.

Shoulder (9 cases).—In all of these there exis either dislocation of the joint or fracture of the head or neck of the humerus. In all of them X examination had not been made or had been dela for some weeks. In three cases dislocations had b missed; in four a fracture dislocation had b missed; in one a fracture had been missed, an one a fracture had been correctly diagnosed bu dislocation missed. This short and sad recital ha

requires a commentary, but it is certainly remarkable that the very same kind of case which many years ago first established the medico-legal importance of X rays should still furnish about 18 per cent. of the present list.

Elbow (3 cases).—Here again the trouble arose in all three cases owing to the absence of radiographic examination. In one there was a dislocation of the elbow which had been reduced, but a stiff joint followed, and at a later period X rays showed that whilst antero-posterior displacement had been corrected yet lateral dislocation had persisted. In one case a fracture of the lower end of the humerus had been missed, whilst in the third a fracture had been correctly diagnosed and treated but a coincident dislocation (of the head of the radius) missed.†

Radius and Ulna (4 cases).—In all these the absence of radiological examination was the cause of litigat on. In two the fractures were missed, and in the other two malunion and non-union occurred, and it was suggested that these complications might have been avoided if the character of the fracture and the position of the fragments had been subjected to inspection by the X rays.

Wrist (5 cases).—In one of these, a Colles's fracture in an elderly patient, a stiff and painful joint resulted, and a second practitioner to whom the patient resorted made certain unguarded remarks about its being "a bad result." Fortunately radiograms had been taken, and treatment carried out on ordinary lines, and therefore the threatened action was withdrawn. In the other four cases no X ray examination had been made. In one the fracture (impacted) had been missed, and in the other three. diagnosed as a Colles's fracture, some complication had been overlooked. This complication in two cases was a fractured scaphoid, and in one case a dislocated semilunar bone.

Digits (3 cases).—In all of these the main injury was so obvious that X ray examination was considered unnecessary. Two were dislocations of the thumb, one being compound and the other a severe laceration, in all three stiff joints followed, and a late radiogram showed splintering of the metacarpals or phalanges.

Femur (11 cases).—This is the largest group of legal cases, being 22 per cent. of the total. In every one without exception the alleged negligence consisted in the failure to make a diagnosis owing to the absence of X ray examination. In three of these impaction had occurred, and the treatment and after-result would not have been much affected by radiography. In one the patient had osteo-arthritis of the hip, which was made much worse by the accident, and it was not until four years later that the presence of the fracture was detected. The other seven cases suffered all the disability which attends an ununited fracture. This is the type of case in which there is perhaps the most excuse to be made for the neglect of X rays. In the first place the deformity is trivial, and no great disability, apart from pain, is apparent so long as the patient remains in bed. An X ray examination would involve the use of a portable apparatus which is often not available or a transport of the patient by stretcher or ambulance to a more or less distant hospital. So the dangerous policy of drifting along without a more accurate diagnosis than those of "sprain" or "contusion" is followed, and eventually the real cause of the disability is discovered, and only too often litigation ensues. Every case of hip injury in which pain and disability do not clear up within one or two weeks should be provisionally diagnosed and treated as a case of fracture, and the patient or her friends should be told of this. The necessary trouble and expense of the X ray examination will be then readily undertaken.

Femur (*shaft*) (3 cases).—In all of these there was malunion and shortening. In two no radiograms had been taken as the diagnosis was so obvious. In one case the patient was transferred to another practitioner, who was able to correct the malposition.

Patella (1 case).—This, like the solitary clavicle case, is of exceptional character and interest.

Dr. A saw a middle-aged lady after she had fallen on her knee and found her suffering from marked synovitis and effusion. This quickly subsided with rest and lotion, and the patella was felt to be of normal outline and mobility. The question of an X ray examination was discussed, but the doctor said he thought it was unnecessary, and as the patient was of very moderate means, but above the hospital class, she was very glad to avoid the expense. A few weeks later, whilst she was walking in the street, she fell down and had to be carried home. A local bonesetter was called to see her, and found an obvious fracture of the patella, with typical separation of the fragments. He advised calling in a surgeon, Mr. B, who operated upon the knee and gave it as his opinion that the patella had been fractured at the time of the first accident and that it ought to have been operated upon at that time. A good defence might have been made on the grounds that even if a fracture had existed after the first accident, yet as the fragments were not separated no operation was then indicated. But Dr. A's statement as to the condition of the patella could not be corroborated in the absence of X ray evidence, and as the claim was made for a comparatively small amount, the chief item being Mr. B's operation fee, it was paid without going into court.

Tibia (5 cases).—In two of these there had been no radiogram. The fractures were compound and the diagnosis obvious. But grave malunion occurred in each, due to lateral displacement which ought to have been recognised and corrected. In one case X rays had been taken, but had missed the seat of fracture. In the other two non-union occurred which required an open operation. But as in both these cases radiograms had been taken and ordinary splint treatment carried out, the threatened litigation had been dropped.

Ankle (5 cases).—In only one of these had X rays been used, and in this case they proved most fortunate, because subsequent trouble was caused by the action and statement of a bonesetter, who declared that he had "replaced one of the small bones of the foot." The radiogram produced proved the fallacy of this statement, and the threat of litigation was withdrawn. In all other four cases there had been no X ray examination in the first place—three "obvious cases of Pott's fracture," and one of "sprained ankle." In the latter a fracture of the malleolous had been missed, and in the former some complication—e.g., fracture of the astragalus, fracture of the scaphoid, or separation of the tibio-fibular junction.

Some Conclusions.

I feel almost ashamed of the wearisome reiteration which this account of the legal cases has involved. I confess that I had no idea when I began compiling this list of what were to be the special points revealed by it. I had no intention of specially advocating the use of X rays, and I certainly had no desire to push the wares of the radiologist. This I will make clear presently by saying what he will probably find unacceptable. But first I must point out the striking fact that in no less than 90 per cent. of all cases in which litigation resulted from the treatment of fractures, the main point on which a charge of negligence was based consisted in the absence of X ray examination. And yet there are many medical men to-day who will argue for and even practise an abstention from X ray examination on the grounds that they are quite capable of making a diagnosis without it! The question, however, is not always one of finding or missing the fracture. In one-third of the cases a correct diagnosis of the main fracture had been made, but the existence of some complication or malunion had been missed. And again it has happened twice in 50 cases that in the absence of X ray evidence an unfortunate doctor was at the mercy of another practitioner who subsequently operated upon the case. The actual analysis of the X ray cases is as follows:—

Diagnosis of fracture missed	28 (56%)
Malunion not recognised	6 (12%)
Some complicating injury to bone or joint missed ..	9 (18%)
Allegation by another practitioner, could not be refuted	2 (4%)
Total	45 (90%)

† This paper was written before the Tyndal *v.* Alcock case had been heard.

It seems to me that to make a diagnosis of a bone or joint injury without the X rays is rather like diagnosing cardiac disease without a stethoscope. It can be done sometimes, and in an age before the apparatus was invented it had to be done; but it was guesswork as compared with precision. There was a time when gynæcological diagnosis had to be made without vaginal examination, and a catheter passed for the female without removing the bedclothes, but now we know that it is much better to "look and see" than to "fumble and guess," and so it is in the matter of fractures and the X rays, and certainly the general public, judges, and juries are fully aware of the fact.

A very real difficulty does, however, exist in small towns, villages, and country districts in dealing with injuries which keep the patient bedridden, and particularly when the patient has only moderate means. Efficient portable X ray plant ought to be available wherever it may be needed, and it could be taken about by the ambulance service. The chief difficulty exists in the matter of personnel. It ought to be possible to have a technical expert, not a qualified doctor, in charge of such X ray plant who would work under the direction of a qualified radiologist, exactly as is done at every large hospital. In this way when a patient cannot afford a consultant's fee an X ray examination could be obtained at a moderate cost.

An exact analogy for this procedure exists in the kindred subject of pathological examinations. Sputum, urine, or tumours are sent by the doctor to a clinical investigation laboratory, and a report obtained for from 2*s*. 6*d*. to 10*s*. 6*d*. Probably the ultimate development of this idea of a cheap mobile X ray outfit will require some form of subsidy by the county health authorities.

Adverse Criticism.

Quite apart from this X ray problem, there remains about 10 per cent. of these legal cases in which the chief factor which menaces the medical man's peace of mind and reputation is the accusation or condemnation pronounced against him by another practitioner. Sometimes this accusing colleague is a man of no professional standing, who has nothing to lose and everything to gain by posing before the public as one who is prepared to point out and correct other people's mistakes. But too often he is a man of position, who in an unguarded moment allowed himself to criticise his colleague's conduct without having had any opportunity of hearing that colleague's statement of the case. Having once made this pronouncement he is forced to abide by it, and to fortify it at a later stage when the matter becomes one for litigation. There may be occasions when it becomes the duty of one medical man to make adverse criticisms of another practitioner's diagnosis and treatment, but it surely ought to be regarded as a rule of medical ethics never to make such a criticism without first inviting the accused colleague to some form of written or verbal consultation. Against this menace of an unscrupulous or indiscreet colleague I fear there never can be any protection beyond that afforded by the defence societies. These may guard our pockets, but they cannot ensure either our reputations or our peace of mind.

It is a part of the onerous responsibility of our calling that we have to face dangers and "to suffer the slings and arrows of outrageous fortune." The man who treats fractures must be prepared to risk this every day. He should be no more deterred from pursuing this branch of his work by the menace of ungrateful patients, or unmerited litigation, than the abdominal surgeon should be by the danger he runs of maiming his hands or losing his life by the prick of an infected needle. It ought, I think, to be a matter of consolation to us on those rare occasions when we meet ingratitude and unjust accusation to reflect how many times we really have deserved censure, but have instead received unmerited gratitude.

An Address

ON THE

RELATIONS OF THE

PUBLIC HEALTH SERVICE AND THE PRIVATE PRACTITIONER.

Delivered before the Manchester Medico-Ethical Society

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THE subject of this lecture appealed to me because my professional life has been divided almost equally between the experience of a general practitioner and that of a whole-time medical officer of health. Without the former experience, or most of it, I should have found it impossible to fulfil the functions of my official position with any measure of success. Even though he may have no direct clinical functions (though no member of the public health service can be completely divorced from such functions), it is essential that the administrator of municipal medical services should have an intimate knowledge of the outlook, the difficulties, and the ultimate value to the public of the private practitioner. The period over which my professional memory extends has witnessed an extraordinary development in our conception, not only of medicine and surgery in the purely scientific and technical sense, but in the relations of members of the profession to each other and to the public. After the academic calm of the university and some resident hospital appointments, my first experience of the rough and tumble of general practice was as assistant to a practitioner in a colliery district of Nottinghamshire. It sounds a terrible confession, but this was in the last century. My principal was totally ignorant of what was then modern medicine and surgery; he was also brutal, mannerless, and avaricious. My colleague was an "unqualified assistant" who told me that he had adopted the medical career after an apprenticeship to the "walking-stick and umbrella trade." He did all the midwifery; and the patients loved him. In fact, several victims of puerperal sepsis would have liked to have had his name on their tombstones. He was a nice little man, and when I got the sack, after a somewhat acute difference of opinion with my principal, he urged me to "go into business on my own" and, above all, to develop "a clap and pox connexion." These reminiscences illustrate some of the conditions of private practice in industrial districts in those days. My colleague must have been one of the last of the "unqualified assistants," but he was a much better "doctor" than his so-called "principal." He had sympathy and imagination, and I fear he must have been reduced to "travelling" in drugs or disinfectants. In those days, and for some years afterwards, at all events in working-class practice, doctors in the same districts were not colleagues. They were "opponents," not merely technically but actually. The only good mark I ever earned as an assistant was when I most unprofessionally, but quite unconsciously, "pinched" the patient of one of my principal's "opponents." She was the wife of the principal butcher in the village, and therefore very important. My self-esteem was greatly flattered, and it was only afterwards I learned that their usual attendant had been abandoned because his debit for joints and sausages had long since ceased to balance his contra-account for bottles of medicine. I might add that in that particular practice midwifery fees had been reduced to 9*s*., and there was a "private club" organised by my principal who contracted to attend whole families for 3*s*. 6*d*. a year! This was, of course, the "reductio ad absurdum" of "general practice," and resulted in atrocities to

which no normally constituted doctor could endure to be a party.

The New Spirit in Medical Practice.

It was some years afterwards in Leigh that I first witnessed the breathing of the new spirit, when "opponents" became colleagues, when we formed a medical society, which very soon amalgamated with the Wigan Medical Guild, and subsequently became the Wigan and Leigh Division of the British Medical Association, which I had the honour of representing for some seven years at the representative meeting of the Association.

Medical practice of the type I refer to was in those days a very sordid form of shopkeeping, a ruthless scramble for patients on terms that rendered them, even from the commercial point of view, unremunerative, and made the doctor's claim to professional status simply farcical. Any of the younger generation who would take the trouble to look up the files of the *British Medical Journal* and read the articles and correspondence on the subject of "contract practice," even in the early years of the present century, would obtain an insight into the conditions under which his father or uncles practised which would be a startling revelation, and I hope would enable him to appreciate the fate from which the British Medical Association has saved him.

National Health Insurance and the Mischievous "Eight-Ounce Bottle."

The reconstitution of the Association was decided at the historic Cheltenham meeting in 1903, when the Representative Body was formed, and by 1911 it was strong enough to fight, and very greatly to modify, what is now the National Health Insurance Act. Had the Bill gone through in its original form it would have meant the enslavement of the profession and a perpetuation of the very conditions I have described, the recognition of which was the real "vis a tergo" that forced the popular demand for reform in the medical treatment of the wage-earning classes of the community. But I think it is now admitted that with all its faults the Act has raised the standard of medical practice of this class and improved the status of the doctor. Personally I think the main objection to it is that it has failed to free the doctor from the tyranny of the "bottle of medicine" habit. It has done nothing to educate the public in this respect, and the panel doctor who does not prescribe or dispense a bottle of medicine will find his list of insured patients dwindling, as certainly as I found my private practice evaporating when I tried to educate my patients to abandon this particular form of vice. Unfortunately, we are now spending some three-quarters of a million pounds annually on "drugs and appliances" under the Insurance Act, and I am convinced that probably half a million of that amount is waste, and much of it mischievous. I expect our ancestors who resorted to universal bleeding did more good and less harm to their patients than we do by encouraging or maintaining the superstition whose outward and visible sign is the eight-ounce bottle.

Team-work in Medical Practice.

There are other factors which tend profoundly to modify the conditions of private practice, and one of them is our modern and inevitable dependence on the pathological laboratory for diagnosis. It is a development of this that causes many of the well-to-do classes to resort to places where they obtain not only diagnosis but treatment, not from a doctor, as of yore, but from a team of specialists. It is quite certain that as this form of medical treatment becomes fashionable for the wealthy its provision, more or less at the public expense, will be demanded by and for the poorer classes of the community. In fact, already some of our voluntary hospitals are being reorganised more or less on these lines. Already we have hospitals with a "surgical section" presided over by a chief who coördinates the work of a "team" of specialists, and is paid a salary for doing so.

In the meantime the health services organised by the State through the local authorities have undergone an enormous change, and in a direction which causes them to encroach more and more on the sphere of the private practitioner and the consultant.

The result of the "industrial revolution" was to create unheard-of wealth, and an enormous increase of population. What had been mainly an agricultural population distributed over the country and dependent on villages and country towns for markets and crafts suddenly underwent a process of clotting. Industrial towns grew up like foul weeds. The demand for cheap labour, and even child-labour, was inexhaustible. Anyone who owned a few square yards of land in the neighbourhood of any industry built a house on it. There were no restrictions on the exploitation of poverty by wealth. People prated about the "sanctity of human life" well knowing that men, women, and children were much cheaper than turnips, and a crop that raised itself without any trouble to anybody else. By the middle of the nineteenth century conditions had become so appalling and death-rates so alarming that the nation awoke to the necessity of taking this problem seriously in hand.

Public Health Legislation Following the Industrial Revolution.

The great Lord Shaftesbury had already won his battle over the first Factory Act and had at least emancipated infancy from one of the most ghastly forms of slavery. Chadwick began to preach sanitation, and the Towns Improvement Clauses Act was passed in 1847. It was the forerunner of much public health legislation. In 1870 the Education Act was passed, and five years later a great deal of scrappy public health legislation was consolidated in the great Public Health Act of 1875. Unfortunately, by that time the mischief was done. We had created a mess which we have by no means cleared up yet. The Act of 1875 very naturally and properly dealt almost altogether with the *environment* of the people. Only in the case of "dangerous infectious disease" was the individual considered, and even then he was not considered as an individual but as a possible danger to the rest of the community. It enabled, and in fact compelled, local authorities to provide adequate water-supplies, to make and cleanse roads and streets, to compel the "abatement of nuisances," and to make at least a beginning of clearing up the Augean stables bequeathed to us by the "industrial revolution." It was followed by a bewildering mass of legislation, various amending Acts, the Food and Drugs Acts, new Factory Acts, Acts dealing with the Notification and Prevention of Infectious Diseases, and all the housing legislation that began with the Act of 1890. There was a flood of legislation, and Parliament even concerned itself with details of the conditions under which rag flock was produced and handled!

Activity in the Twentieth Century.

At the end of the century the work was certainly not half done. We may perhaps claim that it was "well begun," but we can certainly claim no more. Nevertheless, with the beginning of the present century a very marked change came over the spirit of the public health movement, and the public demanded that the municipalities should turn their attention more and more to the direct care of the individual. By that time the campaign against tuberculosis had been in existence for a considerable number of years, but the problem of the infantile mortality-rate had not been seriously tackled, and this mortality had not at all followed the general mortality-rate in its downward career. It was not until the beginning of the century that child welfare work was generally established on the lines with which we are now so familiar, which have resulted in so startling a reduction in infant mortality. Its

proper corollary, the study and care of prenatal conditions, is the most recent growth of public activities. It is since the war that the public conscience has been aroused to the terrible havoc that was being wrought in the present generation and the threat to the future of the race involved in the prevalence of venereal disease. The control of these diseases also has been "municipalised" mainly, I regret to say, on a curative and not on a preventive basis. Again, it was towards the close of the first decade of the century that the Education (Administrative Provisions) Act was passed which established the school medical service, with all its enormous influence for good. Of course, our environmental work has not been neglected. Enormous arrears in the matter of housing have had to be overtaken at a time when the financial burden of the nation is greater than anything ever contemplated by our forefathers, and it should be remembered that in this matter of housing we are doing much more than overtaking arrears. We are aiming at a standard of health and amenity that would have seemed not merely Utopian but insane to the makers of the industrial revolution. We limit our municipal housing schemes to 12 houses per acre, and in some cases we are displacing people from slums where houses are huddled together at the rate of 200 per acre! Every civilised community is now rapidly eliminating such abominable relics of the Middle Ages as the "conservancy" system of disposal of excreta, while we are insisting that backyards shall be paved and existing houses maintained in a state of reasonable repair. Nevertheless, it is quite true, as Sir George Newman said some six years ago, that the centre of gravity of public health administration has shifted from the environment towards the individual, and in this shifting I think there has sometimes been a tendency to concentrate on the cure of end-results at the cost of prevention. Recent results in our antituberculosis campaign have been most remarkable, but in the early enthusiasm for "sanatorium" treatment in elaborate and costly institutions there was an enormous expenditure of public funds without any commensurate result. Education and rational preventive measures would in time make many of our venereal disease clinics an anachronism. Our failure to eliminate rickets is due not to want of knowledge of its cause or of the methods of prevention, but to our inability to get this knowledge home to the very class of people who most require it.

Effect of Public Health Enterprise on Private Practice.

In the meantime all this public work has made the most terrible inroads on the work and the earning capacity of the private practitioner. He has very largely lost his attendance on the expectant mother, and his maternity practice is now largely in the hands of highly qualified midwives. He has lost the infants and the school-children; the tuberculous and the sufferers from venereal disease. There is now a tendency, which becomes more marked every year, to demand the isolation, and therefore the municipalisation, of pneumonia, of measles, and of whooping-cough. Very soon we may acquire some accurate knowledge of the causes of that enormous group of more or less crippling conditions now lumped together in the meaningless mediæval category of "rheumatism," and still absurdly classified in the "international list" as "diseases of the organs of locomotion"! Some of these, if not all of them, will certainly come to be regarded as "preventable diseases," and to that extent the doctor's purse will again be depleted.

A deep resentment against this encroachment on the part of men who have gone through an arduous and expensive training seems to me quite natural, but not necessarily wise. As we have seen, the conditions of medical practice have changed. The majority of members of the public still want their own doctor, who "knows their constitution." They want his friendly manner, his sympathy, and, above all, his bottle of medicine—if possible," the same as they had last time." With the possible exceptio of the bottle of medicine, all these are good thing and I daresay when my time comes I shall welcom the presence at my bedside of the successor c Trollope's Dr. Fillgrave, without whose sanction n one could die respectably. But the custodians c the people, their politicians, the insurance companie and the so-called "friendly societies" will not, they can help it, permit the perpetuation of thes luxuries. The statesman sees that under moder conditions the nation can no longer afford avoidab invalidity, even though the medical profession ma still have a vested interest in disease.

It is useless for us to protest against these economi tendencies or to attempt to oppose them. I believ that with the lessened incidence of disease, and th increase of "team work" in the profession, th nation will not be able in future to support as man doctors as it has done in the past, and that we shoul endeavour to limit the entries of medical students b demanding a much higher standard of preliminar general education than we have done in the past. think that some experience of "general practice should be compulsory before any form of specialisatic is permitted, and that the profession should at lea try to reorganise itself from within so as to giv every member an interest in the preventive side of h work. In Sheffield, since I have been responsib for it, the clinical part of our prenatal and chil welfare work has been carried out entirely by a sta of general practitioners working on a part-time basi and, judging by our results and the smoothness of th administrative working, I see no reason to wish t change it. Our venereal disease clinics are operate by part-time specialists, and I think the future preventive work may, if they choose, be largely i the hands of private practitioners, provided they a prepared to maintain the value of public work b the standard of their private practice.

UNRECOGNISED TOXIC SUBSTANCES I HUMAN FÆCES.*

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With an Account of Experiments by

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This communication is intended to be frank provocative and suggestive; to provoke thoug and commentary from teachers of clinical medici on the correctness of the views expressed, a to suggest to practitioners the necessity in t interests of medical progress of their independe thought and observation on facts which come dai under their own notice. The late Sir James Macken divided clinicians into two groups—those who do n know, and know that they do not know, and tho who do not know, and do not know that they do n know. I write frankly as a member of the first grou Stated shortly, my thesis is: the urgent necessi at the present time of clinicians directing th attention to the teaching of Bouchard, Metchniko Arbuthnot Lane, and William Hunter. Few will de the present unsatisfactory state of our knowledge the ætiology of most common medical disorders th fill our hospital wards to-day, our comparative hel lessness in curing them, or our too limited endeavo along lines of preventive treatment. Much attenti has been directed for many years, and with mark success, to making more complete our knowledge the physical signs of disease, to refinement in diagnos and to research work, both clinical and laborato dealing with the end-products of disease. Too lit

* A paper read at the Medico-Chirurgical Society Edinburgh on Jan. 18th.

ttention has been directed to the search for any ndamental principles at work in inducing the iseased states, the recognition of which would simplify nd clarify our present elaborate classification of iseases and would pave the way for a more rational nd successful therapy. My observations, over a period f nearly 30 years, have led me to think that the eaching of the above authorities, to which little erious attention is now directed by clinicians, rnishes a key both to the simplification of the present lassification of disease and to much greater success n its treatment.

Bouchard, Metchnikoff, Arbuthnot Lane, William Hunter.

Bouchard directed his attention to the problem of he toxicity of the urine and fæces, and its significance n relation to the æviology of various diseases. In mphasising as he did the influence of the liver and ile in controlling the abnormal fermentative and utrefactive processes, of which he found evidence n the fæces, he was in agreement with the views of any distinguished medical writers in the past who rrived at the same conclusion on purely clinical rounds. Bouchard's work on Auto-intoxication was ublished over 35 years ago; the great value and gnificance of much of his work has not yet been dequately recognised. Metchnikoff, approaching the ubject from the wide standpoint of a biologist of the oremost rank, made an extensive study of nutrition nd degeneration as seen in lower plant and animal fe. The results of his researches led him to the nclusion that a slow and insidious absorption of oisons from the large intestine was a factor of rimary importance in inducing the degenerative and clerotic changes characteristic of most common iseases in man. His conclusions, if established, are far-reaching importance. Little attention has so r been directed towards proving or disproving their alue. Arbuthnot Lane, from an independent clinical udy of the problems, is in general agreement with etchnikoff's teaching as to the profound importance the large intestine as the main source of origin of iseases. It is probably not too much to say that s powerful advocacy of his well-known views is owly exerting a marked influence on many thoughtful nd open-minded members of the profession. Opinions n the value of Arbuthnot Lane's teaching are, owever, strangely divided. On the one hand, we find ir William Milligan, in a preface to a recently ublished useful book on Chronic Constipation written y a layman, writing as follows:—

"Dedicated as the work is to that distinguished Surgeon nd Founder of the New Health Society, Sir Arbuthnot ane, to whose untiring efforts in the cause of Health the ublic owe so much, the part played by the author in resenting so much valuable information should not be llowed to pass without due acknowledgment and gratitude."

On the other hand, it would appear from Sir Thomas ordor's MacAlister lecture on Diet and Dietists that is commendation is another "glaring instance of ualified practitioners giving 'cover' to unqualified en." The time seems ripe for the profession to etermine in which direction the line of progress lies. he work of William Hunter should also be referred o. Associated as his name so honourably is with ork of great value on the anæmias, it is not commonly cognised thau his pioneer researches have far-aching significance and value in a much wider field clinical medicine. His work on the rôle of auto-fection from the intestinal tract, secondary to oral psis, brings it into close relation with the foregoing. n a recent appreciative reference to Hunter's work nd the scanty recognition it has received from the ofession, Sir Berkeley Moynihan, speaking of the position originally offered to Lister's epoch-making searches, submitted as an explanation that "some inds are impervious to novelty; truth seemed to be nt at an angle as it entered the rather denser medium their minds." In this connexion it might be added at the great significance and value to clinical medicine of Moynihan's brilliant contributions to surgery have so far not yet received the thoughtful consideration that is due. It is only right to add that in some of the special departments of medicine increasing importance has been attached in recent years to the probable rôle of an alimentary toxæmia in inducing various common disorders. A reference to several modern text-books on dermatology and ophthalmology, for instance, shows that many specialists in these departments of medicine are satisfied on general clinical grounds that some derangement of the bowel, of a nature not yet ascertained, is primarily responsible for some of the common diseases coming under their observation. This emphasises the necessity of the subject receiving more attention at the hands of the general physician.

Erroneous Teaching re Normal Fæces.

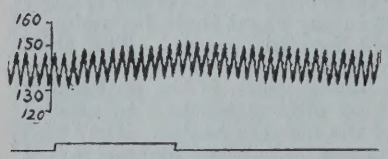
It would appear from the literature that the chief difficulty in the way of leading medical writers recognising the importance of what may, for want of a better term, be called alimentary toxæmia, lies in the "absence of proof." No one has adduced any exact experimental evidence that the fæces contain a substance or substances which can be proved by laboratory tests to exert a toxic action. Neither has any laboratory worker been able to produce a substance in a test-tube and say "Here is the toxic substance." On a question that is so largely clinical it is doubtful how far these criticisms have the validity claimed for them, but in any event their discussion is hardly necessary, and for this reason. The chief factor, which has arrested progress of our knowledge of the subject for so many years, is the profoundly erroneous views held by clinical teachers in general as to the condition of the fæces in health. The fæces of a healthy adult man on a judiciously planned mixed dietary are, like those of many of the lower animals, practically odourless; they show little or no sign of abnormal fermentation or putrefaction. The unpleasant odour which results from the administration of a liver pill, followed by a saline, should not be regarded as indicating that under normal conditions putrefactive changes of a gross nature are physiological. It should rather be interpreted as an all-important indication of the special importance of the liver and bile function in regulating the processes of primary digestion; it is possible that it should be interpreted as indicating that the judiciously planned mixed dietary referred to above, though excellent for all practical purposes, is not so physiologically perfect as it might be. A clinically accurate method of determining whether a bowel is reasonably clean or not is effected by the use of the enema syringe. In health, if the bowel is washed out by an enema of plain water, two and a half pints or thereby, the fluid will be immediately returned with the contents of the lower colon; if a second wash-out of the same amount be then given the fluid will be returned and it has the following characteristics: it will be practically clear, or of a light straw colour, it will be entirely free from odour, there is no deposit, or, at most, fragmentary traces of fæcal matter and mucus, are present; if a drop of the fluid is stained by Gram's method very few, if any, bacteria are observed. This condition of affairs is very rarely seen in hospital practice. On the contrary, it is no exaggeration to say that in probably 99 out of 100 ordinary hospital patients the second wash-out from the bowel is, on admission, a highly feculent, offensive excretion, dark brown in colour, with a copious fæcal deposit, and a Gram-stained film of a drop of the fluid presents a picture, which in regard to the number of bacteria present, is often indistinguishable from that of the first wash-out. This fact is itself conclusive evidence that, apart from any qualitative changes in the flora, there is an enormous increase of bacterial activity in the bowel, with great potential power of injury to the tissues. (In regard to the presence of bacteria in the fæces it may be stated that the writer showed conclusively some years ago that the traditional teaching as to the

vast majority of bacteria in the fæces being dead is erroneous.) This highly putrefactive state of the bowel is so universal in hospital patients that it has misled both medical men and nurses as to the normal. An illustration of the error into which clinical teachers have fallen on this subject may be quoted. Writing on the subject of the possible relations of Alimentary Toxæmias to Migraine, Dr. Hurst says :—

"We have never found any abnormality by means of test-meals, microscopical, chemical, and bacteriological examination of the stools and urine, radiological examination of the alimentary tract, lævulose test for hepatic inefficiency, estimation of blood-sugar, urea, uric acid, blood counts, and cutaneous tests for protein sensitisation."

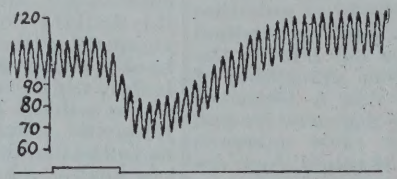
This provides at once a good example of the thoroughness and inefficacy of some modern methods of investigation. No reference is made to the general appearance and highly offensive nature of the stool which would be amply proved if the test outlined above were applied. In a considerable experience of such cases I can confidently affirm that if the practitioner makes sound use of his unaided senses the more elaborate tests referred to above may, as a rule, be disregarded. And it is of practical moment to know that there is a most important relationship between the time required to restore the bowel to a natural state of cleanliness and the duration of the symptoms of the disease.

FIG. 1.



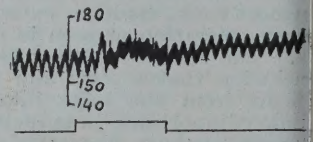
Cat. Paraldehyde and ether. Blood pressure. Shows the effect of injection of 10 c.cm. of pigmented extract from the content of cæcum of sheep. Note no change. Scale = blood pressure in mm. of mercury.

FIG. 2.



Cat. Paraldehyde and ether. Blood pressure. Shows the effect of injection of 4 c.cm. of the extract from the content of large intestine of cat. Note the fall of blood pressure from 94 to 64 mm. of mercury. Scale = blood pressure in mm. of mercury.

FIG. 3.



Cat. Paraldehyde and ether. Blood pressure. Shows the effect of injection of 20 c.cm. of pigmented extract from the content of large bowel (first wash-out) of an apparently healthy individual. Note no change. Scale = blood pressure in mm. of mercury.

Toxins in Human Fæces.

If the teaching of the above writers is correct, it is reasonable to expect that modern methods of laboratory investigation should reveal conclusive evidence in its favour. In recent months I have had an opportunity of testing this. I was interested to learn some months ago that Dr. P. De, who had attached himself to my ward and laboratory for the study of some of the problems referred to in this paper, had devoted himself to the investigation of pharmacological problems in the Pharmacological Department of Edinburgh University. He fell in with my suggestion that he should test the pharmacological action of extracts of the fæces of lower animals, apparently healthy men, and of patients in the wards. By arrangement, the source of the individual extracts in the earlier series of experiments was not known to him prior to the determination of the result. The extracts were prepared as follows. In the lower animals six ounces approximately of fæcal matter were collected, care being taken to prevent admixture with urine. The specimens examined were for the most part obtained from animals which were under my own observation, the dietary being known; in the pig and sheep the contents of the bowel were collected by me personally at the slaughter-house from newly killed animals. The fæces of a healthy judiciously fed horse, pig, and sheep are virtually odourless; in the cow the fæces may be odourless, but frequently show evidence of slight putrefaction; the fæces of the cat emit a strong putrefactive odour. The fæces were extracted with plain tap water, repeated agitation being carried out, and subsequently filtered. The filtrate obtained varied in colour, some extracts being highly pigmented, others much less so. The extract was then filtered by passing through a porcelain filter to remove the bacteria present, and its sterility subsequently determined by bacteriological examination. This provided the filtrate referred to as the pigmented extract. In many instances the pigment matter in the extract was removed by charcoal, in order to determine whether any reaction obtained was due to the presence of bile pigment; such filtrate is referred to as non-pigmented extract. The fæces of the human subject were treated similarly, observations being made on the filtrate obtained from the use of a first enema of 2–2½ pints of plain water—control observations were made with distilled water and normal saline—and from a second injection of a similar nature administered after the first had been returned. Some additional observations were made on the action of an extract prepared from fluids obtained after 12–13 pints in all had been administered, but these are at the moment of subsidiary interest.

Experiments were directed to ascertain the following points: 1. The effects, if any, on the blood pressure of cats, of the original extracts of the fæces, as described above (pigmented extracts). 2. The effects if any, of the same extracts after removal of the pigment by charcoal (pigment-free extracts). 3. Any modification of the action induced by subjecting the extract to boiling for ten minutes.

EXPERIMENTS BY DR. DE.

A number of extracts prepared from the bowel wash-outs of men in health and disease and from the fæces of lower animals were tested to observe their effect on blood pressure of cats. The extracts tested were clear fluids, free from any suspended matter and varied in colour from very light straw to deep amber; the extracts from the first wash-out were generally darker in colour than those from the second. The reaction of the solutions was mostly on the alkaline side, the pH varying from 6·5 to 8·9. The extracts from which the pigmented matter had been removed by charcoal were perfectly clear solutions. The experiments were done on cats weighing generally from 2·5 to 3 kg. The animals were anæsthetised with paraldehyde and ether. The injections were given slowly, and so far as possible at a uniform rate, into the jugular vein, and the carotid blood pressure was recorded in the usual manner.

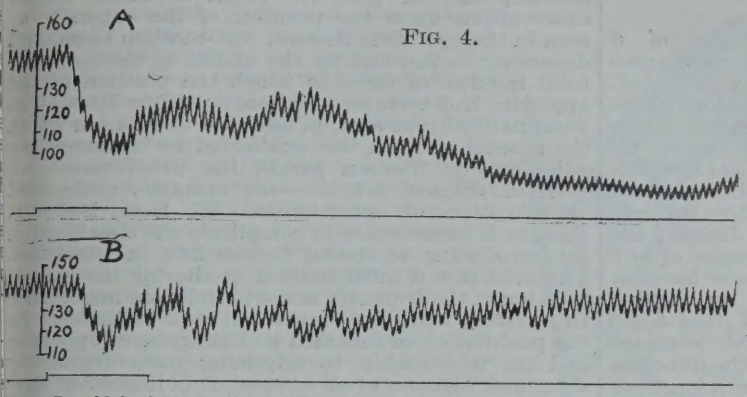
To obviate any error due to the amount of fluid injected, control observations were made with similar amounts of distilled water, tap water or saline. In the course of the experiment it was deemed advisable to test the effects of administration of the extract by injection into the femoral vein. The amount injected ranged from 1 c.cm. to 20 c.cm., and in a few cases to 30 c.cm.

Experiments with extracts from the fæces of animals.—Observations were made on the effects of extracts prepared from the fæces of sheep, pig, horse, cow, calf, and cat. The extracts from sheep (pH 7·6), pig (pH 8·1), and horse (pH 7·5–7·6) gave no fall in the blood pressure (Fig. 1). 20 c.cm. of an extract from cow (pH 7·5) and calf (pH 7·3) and 10 c.cm. of extract from cat (pH 7·1) reduced the

systolic blood pressure from 137 to 80, 130 to 52, and 112 to 63 mm. of mercury respectively (Fig. 2). The depressor effect of the extract from cat was to a marked extent destroyed by boiling the extract in water bath for 10 minutes.

Extracts from apparently healthy stools.—Extracts from three apparently healthy subjects were tested. The extracts

FIG. 4.



Cat. Paraldehyde and ether. Blood pressure. A shows the effect of injection of 10 c.cm. of the pigmented extract from the first wash-out of a case of melancholia. Note the marked fall in pressure, slowly recovered from. B shows the effect of injection of 10 c.cm. of the same extract after boiling in water bath for 10 minutes. Note the reduction in the depressor effect. Scale = blood pressure in mm. of mercury.

pH 6·5 to 7·6) caused a very slight or no fall of blood pressure when 20 c.cm. was injected (Fig. 3). Boiling did not materially alter the action.

Extracts from unhealthy bowel wash-outs.—Observations were made with extracts of the fæces from cases of melancholia, pernicious anæmia (pH 6·7), dysentery (pH 8·1), chorea (pH 8·4–8·9), disseminated sclerosis (pH 6·7), heart disease with impaired digestion (pH 6·5), high blood pressure (systolic blood pressure 175 in an individual of 65 years), (pH 6·9–7·0), bulbar paralysis, jaundice, diabetes mellitus (pH 6·5–6·6), subacute nephritis (pH 7·2–8·9), and pleurisy. These showed a fall of blood pressure. The results were in marked contrast to those obtained from the apparently normal subjects. A distinct lowering of the blood pressure was induced as illustrated in the figures. Fig. 4A illustrates the effect of injection of 10 c.cm. of the pigmented extract from the first wash-out of a case of melancholia. The blood pressure fell from 138 to 100 mm. of mercury, and the recovery was slow. Fig. 5 shows the effect of injection of 20 c.cm. of the pigmented extract from the first wash-out of a case of dysentery. The reduction of the blood pressure in this case was from 130 to 74 mm. of mercury. Fig. 6A shows the effect of injection of 10 c.cm. of extract from a case of heart disease with impaired digestion. A marked fall of blood pressure from 132 to 80 mm. of mercury was seen in this case also. Fig. 7 illustrates the fall of blood pressure with 1 c.cm. of extract from a case of pernicious anæmia. It shows the fall of blood pressure from 180 to 103 mm. of mercury with the extract from the second wash-out, while with the extract from the first wash-out the fall of blood pressure was from 163 to 130 mm. of mercury.

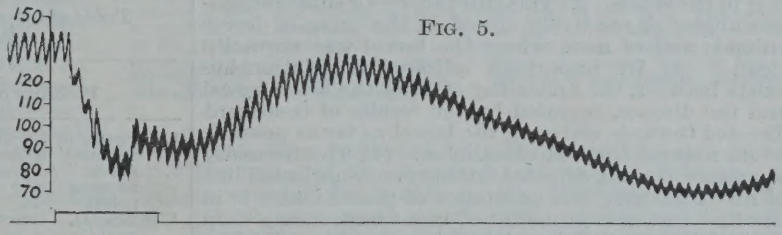
Effect of the filtrate from which pigment has been removed by charcoal.—In the cases of jaundice, dysentery, melancholia, and subacute nephritis, no fall in the blood pressure was obtained. Fig. 5 shows the effect in a case of dysentery with a dose of 20 c.cm. of the original extract.

Effect of the filtrate after boiling.—The extracts from cases of pleurisy, dysentery, diabetes mellitus, pernicious anæmia, and heart disease with impaired digestion, when boiled in a water bath for 10 minutes, showed no change in the depressor effect when compared with the original solution. Figs. 6A and B show the effect of injection of 10 c.cm. of the extract, before and after boiling, from a case of heart disease. In the subjects with chorea, melancholia, disseminated sclerosis, and high blood pressure it appears that a part of the depressor action was destroyed by such boiling. Figs. 4A and B show the comparative effect in a case of melancholia when 10 c.cm. was injected. In a case of subacute nephritis the depressor action was completely destroyed by boiling.

Extract from first and second wash-out.—The extract from the first wash-out generally gave a greater fall of blood pressure than that from the second. Exceptions to this were, however, noticed in the case of pernicious anæmia.

Effect of injection into femoral vein.—The results of injection of similar doses of the extract into the femoral vein showed practically the same effect as that of injection into the jugular vein.

FIG. 5.

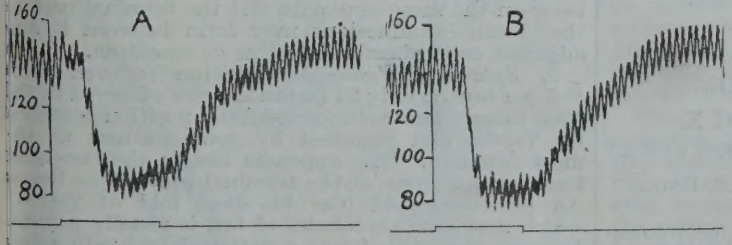


Cat. Paraldehyde and ether. Blood pressure. Shows the effect of injection of 20 c.cm. of the pigmented extract from the first wash-out of a case of dysentery. Note the marked fall in the blood pressure slowly recovered from. Scale = blood pressure in mm. of mercury.

Summary.

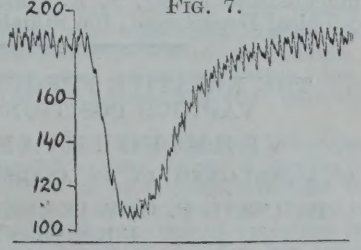
(1) The extracts from the fæces of sheep, horse, and pig gave no fall of blood pressure; those from cow, calf, and cat produced a marked fall in the blood pressure. (2) The extracts from the contents of the apparently healthy bowel gave very little or no fall of the blood pressure. (3) A fall of blood pressure was obtained with the extracts in the various diseases investigated. (4) The depressor effect obtained by injection into the jugular vein was

FIG. 6.



Cat. Paraldehyde and ether. Blood pressure. A shows the effect of injection of 10 c.cm. of extract from a case of heart disease with impaired digestion. Note the marked fall of blood pressure. Time = 2 seconds. B shows the effect of 10 c.cm. of the same extract after boiling in a water bath for 10 minutes. The depressor effect has not been altered by boiling. Scale = blood pressure in mm. of mercury.

FIG. 7.



Cat. Paraldehyde and ether. Blood pressure. Shows the effect of injection of 1 c.cm. pigmented extract from the second wash-out of a case of pernicious anæmia. Note the fall in the blood pressure. Scale = blood pressure in mm. of mercury.

equally obtained when the fluid was injected into the femoral vein. (5) The varying results recorded from the injection of the original extract and the extract, as obtained by treatment with charcoal and by boiling, appear to indicate that there is more than one toxic substance present.

Conclusions.

These experiments prove the existence of a hitherto unrecognised toxic substance or substances in the fæces in the different diseases investigated. The absence or—keeping in view the limitations in the amount of extract employed—relative absence of this substance as observed in lower animals, opens up questions of great physiological and clinical interest. These are enhanced by the results obtained from the examination of apparently healthy adult subjects living on a judiciously planned mixed dietary, the criteria of health being the complete absence of any symptoms or signs of disease, *with the lower bowel in the naturally clean condition intended by nature.* Without speculating on the nature of this toxic substance or substances, difficult and complex questions arise in regard to variations in the direction of abnormal manufacture of the toxic principles, their undue retention, and alteration in the absorptive power of the lining membrane of the bowel. The results of the experiments recall the researches of Dale and Barger, Mellanby, Lewis, and others, on histamine and histamine-like bodies present in the lining membrane of the bowel; their possible relationship to various researches on abnormal proteose substances also require investigation.

(1) For the first time a powerful toxic substance has been shown in the fæces of the diseases studied, in which the unaided senses revealed excessive putrefaction in the stools. (2) This substance—or substances—was absent or relatively absent in the fæces of lower animals and of men, where the bowel was normally clean. (3) An important ætiological relationship exists between the unhealthy state of the lower bowel and the disease, revealed by the results of treatment directed towards restoring the bowel as far as possible to its natural state of cleanliness. (4) The necessity of attention being directed to this much-neglected line of investigation; the assistance of practitioners is in the first instance probably of more importance than that of the specialist or laboratory worker. (5) The study of disease on the lines suggested accentuates the need for a closer study of the influence of heredity and of variations in the individual reaction to disease; it also involves the closer application of Listerian principles to medicine as opposed to surgery.

I have much pleasure expressing my cordial appreciation of the admirable facilities afforded by Prof. Clark for the work carried out in his department and for various helpful suggestions; also my indebtedness to Mr. T. E. Condon, of the Pharmacological Department, for valuable assistance.

THE RELATIVE FREQUENCY OF THE VARIOUS POSITIONS OF THE VERMIFORM APPENDIX

AS ASCERTAINED BY AN ANALYSIS OF 5000 CASES.*

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THE literature concerning the position of the cæcum and appendix is vast; but notwithstanding the excellent work which has already been done, there is a general feeling that the individual experience of many surgeons and anatomists does not conform with the statements that have been published and accepted with regard to the relative frequency of the different positions of these organs. It was on this account that in 1914 we began to make careful observations upon the position of the appendix as seen in the operating theatre, post-mortem room, and dissecting rooms, and by the middle of this year the total number of cases in which the position of the appendix had been recorded amounted to 5000. These cases naturally include, in addition to those in which the normal position was unaffected by inflammatory adhesions or traction bands, the usual cases met with in surgical practice—for example, acute and chronic cases of appendicitis. We have, however, thought it unnecessary to complicate the classification by introducing accidental factors into the statistics. The influence of inflammation in altering the normal position of the appendix is not of sufficient importance to interfere with the general value of statistics. As the position of an inflamed and gangrenous appendix and its relationship to adjoining parts frequently determine the site of an abscess, it is important that the surgeon should have some knowledge of the relative frequency of the various situations in which the appendix may be found, and its relationship to the surrounding pouches and folds of peritoneum.

A good deal of misconception arises from the use of certain terms for the folds of peritoneum and fossæ around the cæcum and appendix. As it is of the greatest importance that these names should denote a definite condition, we have thought it necessary to define clearly in the following table what we understand by the terms employed in this article.

Table showing Positions of the Appendix, with their Relative Frequency.

Positions of appendix.	No. of cases.	Per cent.
1. Anterior or pre-ileal	47	0·94
2. "Splenic" or post-ileal	25	0·5
3. "Pelvic," on psoas muscle, near or hanging over the brim of the pelvis	1606	32·11
4. Subcæcal, beneath the "caput cæci"	101	2·02
5. Post-cæcal and retrocolic	3219	64·38
6. Ectopic	2	0·04

The Various Sites of the Appendix and Associated Peritoneal Conditions.

1. The *anterior* or *pre-ileal* position is rare (0·94 per cent.). The tip of the appendix is directed upwards and forwards over the terminal part of the ileum. The meso-appendix is long and there is usually a small ileo-cæcal fold. Should the appendix become inflamed, abscess may occur either in the space included between the meso-appendix and the terminal part of the ileum, or adhesions may form between it and adjacent coils of small intestine or omentum.

2. *Splenic* or *post-ileal* position is even rarer (0·5 per cent.); only 25 instances were observed in the 5000 cases. This is the well-known position described by Treves and regarded by some authors as the most common. The appendix lies in the ileo-cæcal fossa, under cover of the terminal part of the ileum. An ileo-cæcal fold (the bloodless fold of Treves), which may contain lobules of fat, is usually present. In some cases this forms a flattened fold with a free rounded border resembling a large appendix epiploica; at other times it is a crescentic fold with a sharp free border, directed to the left and passing from the anterior aspect of the terminal part of the ileum and the adjacent part of the cæcum to the root of the appendix or its mesentery. If inflammation of the appendix should occur when it is in this position, mesenteric thrombosis, leading to portal pyæmia, is likely to ensue. This we regard as the most dangerous position the appendix may assume.

3. The *pelvic or descending* position occurs in 32·11 per cent. of our cases. The tip of the append-

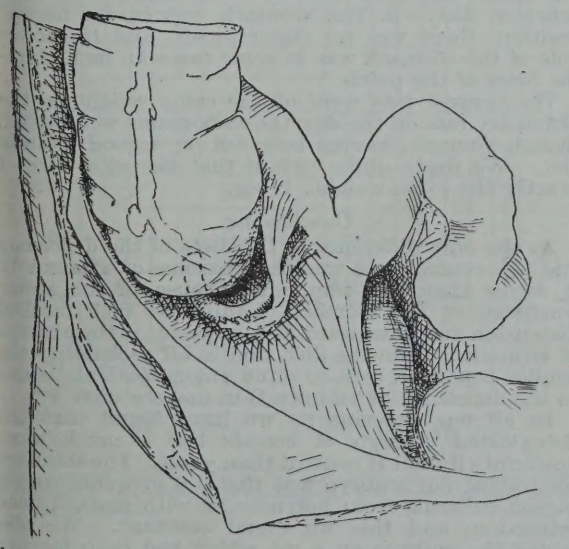
* Abstract of a paper read before the Anatomical Society of Great Britain and Ireland on Nov. 25th, 1927.

is usually directed downwards on the psoas and may hang over the brim of the pelvis; it is not infrequently associated with a genito-mesenteric fold which causes a downward kink of the terminal part of the ileum. This may lead to obstruction with resulting dilatation of the proximal portion of the gut, as originally pointed out by Arbuthnot Lane. It is probable that the position of the appendix in these cases is determined by the genito-mesenteric fold, which lies to its left side and passes vertically downwards from the posterior aspect of the ileum or left side of the mesentery to the internal abdominal ring, or, in the female, to the ovary. This relationship is important in connexion with the establishment of a secondary connexion between the lymphatic vessels of the ovary and appendix. Should inflammation ensue in an appendix overhanging the pelvic brim in a female, it may become adherent to the right ovary, and pain may occur in the right iliac fossa during menstruation. Such an appendix may also become adherent to either bladder or rectum and be the cause of painful micturition or defæcation; and should an abscess form it may discharge into the bladder or rectum.

4. The *subcœcal* position of the appendix (Fig. 1) beneath the caput cæci was present in 2·02 per cent. of cases. The appendix with its mesentery is twisted in a clockwise direction from left to right and its tip is usually directed upwards. If an ileo-cæcal fold is present it may cover the root of the appendix. In the specimen illustrated a genito-mesenteric fold was present, with a downward kink of the ileum. If inflammation should take place with the appendix in this position an abscess may form, and may discharge through the fascia iliaca into the substance of the iliacus muscle. Such a condition may give rise to spasm of the muscle and consequent flexion of the hip-joint.

5. The "*post-cœcal*" and *retrocolic* positions. This

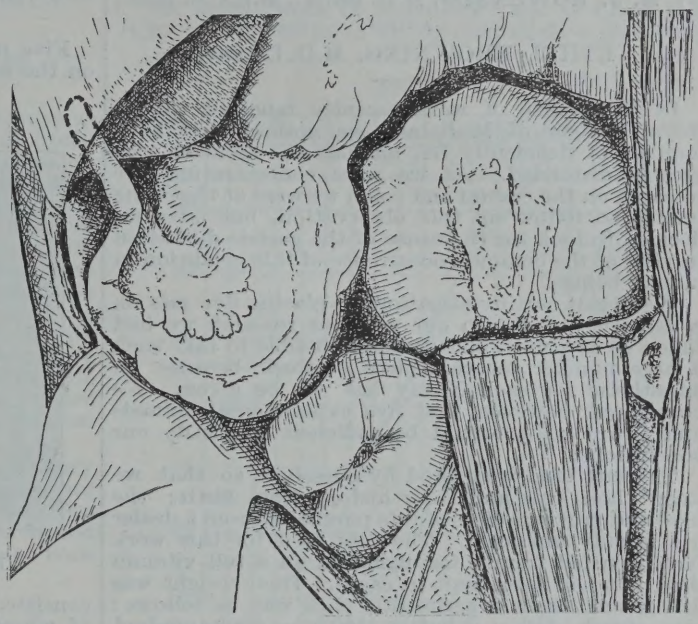
FIG. 1.—*Subcœcal Position.*



The appendix lies in the iliac fossa, with the apex directed upwards. There is a well-marked ileo-cæcal fold containing fat, which lies in front of the root of the appendix and its mesentery. There is also a genito-mesenteric fold, which has produced a downward "kink" of the terminal part of the ileum.

is the most common situation of the appendix. In our series there were 3219 cases representing 64·38 per cent. This is in accordance with the general experience of surgeons and anatomists at the present time, but differs markedly from the statistics which

FIG. 2.—*Ectopic Position: Prehepatic.*



The tip of the appendix is directed upward beneath the right half of the subcostal arch, and superficial to the right lobe of the liver. The cæcum is conical, and gradually tapers into the root of the appendix. It lies in the right lumbar region, and the ascending colon, which is superficial in position and very short, passes without any sharp hepatic flexure directly into the transverse colon. There is a well-marked ileo-cæcal fold containing lobulated fat.

have been published by previous writers and quoted in many of the standard text-books. This may be accounted for, partly by the difficulties which arise from one group overlapping another, and partly from the subdivision of the posterior positions, which are essentially the same, into two or more groups, thus masking the true frequency of the most common type. For instance, the tip of the appendix may be directed towards the spleen and thus be classed as splenic or post-ileal in position. It is, however, essentially retrocæcal in position. As stated in a previous communication,[1] the retrocæcal type of appendix may be found: (*a*) free in a post-cæcal or retrocolic pouch of peritoneum; (*b*) held in contact with the cæcum or ascending colon by a short mesentery; (*c*) adherent to the cæcum or colon, which, with the appendix, forms the anterior wall of a retrocolic pouch of peritoneum; (*d*) behind the cæcum and ascending colon, but, owing to obliteration of the retrocolic pouch, entirely extraperitoneal.

There is no doubt that inflammatory changes occurring in the appendix may cause a perfectly free appendix in position (*a*) to become adherent to the cæcum and so come into subdivision (*c*). There is also, however, a considerable amount of variation in the degree to which the cæcum and ascending colon become adherent to the posterior abdominal wall and iliac fossa in the course of normal development, apart from any secondary adhesion caused by inflammation.

6. The ectopic position of the appendix is excessively rare; only two cases have occurred in our series. In one the appendix was prehepatic in position (Fig. 2), while in the other it was lying free, with the cæcum below the stomach and transverse colon.

[1] British Journal of Surgery, 1924, xi., 503.

THE RELATION OF DEFICIENCY OF VITAMIN B TO ATONY OF THE STOMACH.

By M. J. ROWLANDS, M.D. Brux., M.R.C.S. Eng.,
AND
ETHEL BROWNING, M.D. Liverp.

In the course of work recently reported to the Royal Society of Medicine [1] we noticed that in a number of deficiently fed animals the stomach was greatly distended. As we were concentrating our research on the cæcum and colon we were at that time unable to follow up this observation, but later we decided to look for the cause of the gastric dilatation in view of the common occurrence of this condition in human beings.

We began our investigation by placing five rats on a deficiency diet. In our previous research we had taken 50 as a unit, but it was impossible to take such a large number for this piece of work because an anæsthetic for each X ray has to be given. We considered, however, that five experimental animals and five controls would be sufficient to justify our conclusions.

The rats used were bred by ourselves, so that we knew their ages and their history from birth; the ages and previous diets of rats purchased from a dealer are usually unknown. The rats used for this work had been fed from a fortnight old on a full vitamin diet, but had been kept in cages. Their weight was 120 g. and their experimental diet was as follows: rice starch, 650 g.; butter, 100 g.; devitaminised casein, 200 g.; salt mixture, 50 g. Owing to the difficulty of keeping rats on this diet for more than three or four weeks we decided to add 1 per cent. yeast extract, which enabled us to keep them alive for six weeks. At the end of this period the rats

Fig. 1. Fig. 2.

Radiogram of rats fed on a diet deficient in vitamin B, showing ptosis and dilatation of the stomach.

readily ate a meal of barium carbonate made into pilules with bread crumbs, milk, and sugar. We intended to take the radiograms one hour after the meal, but owing to a breakdown of our plant they had to be taken three and a half hours after the meal. Whilst realising that the work would have been much more satisfactory had we been able to radiograph the animals within an hour of the barium meal, we nevertheless feel that the results justify publication. In several of the radiograms a big air-space was noticed in the upper pole of the cardiac end. Figs. 1 and 2 are radiograms of deficiently fed rats.

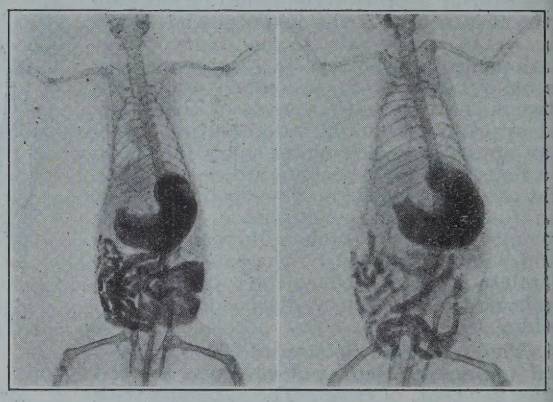
The following points we consider of importance: 1. The distension was almost entirely in the cardiac portion of the stomach, and not in the pyloric region. 2. The distension was in an upward direction. 3. Apart from the distension there was marked visceroptosis, and in some of the animals the lower pole of the stomach was at the brim of the pelvis. 4. In some of the rats the distension was so great as to be visible externally.

[1] Rheumatoid Arthritis: Is it a Deficiency Disease? Proc. Roy. Soc. Med., 1927, xx., 41.

Control Animals.

Five rats bred in the same way and originally fed on the same diet were taken as controls. Their diet

Fig. 3. Fig. 4.



Radiogram of control rats fed on normal diet.

consisted of sterilised meat meal, detoxicated embryo of wheat (bemax), barley meal and middlings, with 2 per cent. cod-liver oil and 2 per cent. bone-meal, thus ensuring a sufficient amount of vitamin B, which was lacking in the diet of the deficiency rats. These rats were given a barium meal, and a radiogram was taken three hours later. Figs. 3 and 4 are representative of the control radiograms. It will be seen that owing to the long interval a large amount of barium had left the stomach, but enough remained to give the outline of the stomach itself.

The following points are to be noted: 1. There was no enlargement of the cardiac end. 2. The size of the stomachs of the rats fed on a full vitamin B diet was about one-third of those of the animals fed on a deficient diet. 3. The stomach was in its normal position, there was no visceroptosis, and the lower pole of the stomach was in some cases an inch above the brim of the pelvis.

The control rats were of the same weight as the deficiency rats on the day the radiograms were taken, though younger, having been fed on a good vitamin diet. We made quite certain that the rats were of exactly the same weight, 110 g.

Conclusions.

As the only difference in the diets of the deficiency and the control rats was the presence of vitamin B it seems that the commonest cause of an atonic condition of the stomach, leading to such marked distension and downward displacement, is the absence of vitamin B from the diet, and in all probability the similar condition seen so often among patients is due to the deficiency of vitamin B in modern diet.

In all our experiments we have found that the detoxicated embryo of cereals has a much more powerful vitamin B content than yeast. The standard for testing our embryo was that 1·0 g. would cure a pigeon suffering from polyneuritis with marked head retraction, and this we found constant. We also tested the embryo on a rat which had been for five weeks on a diet deficient in vitamin B and had developed complete paralysis of the hind legs and convulsions. It was almost miraculous to see how rapidly this rat recovered; within an hour of taking the embryo the convulsions entirely ceased and the rat was able to move its hind legs.

The histological findings will be described by us in a later paper.

Clinical and Laboratory Notes.

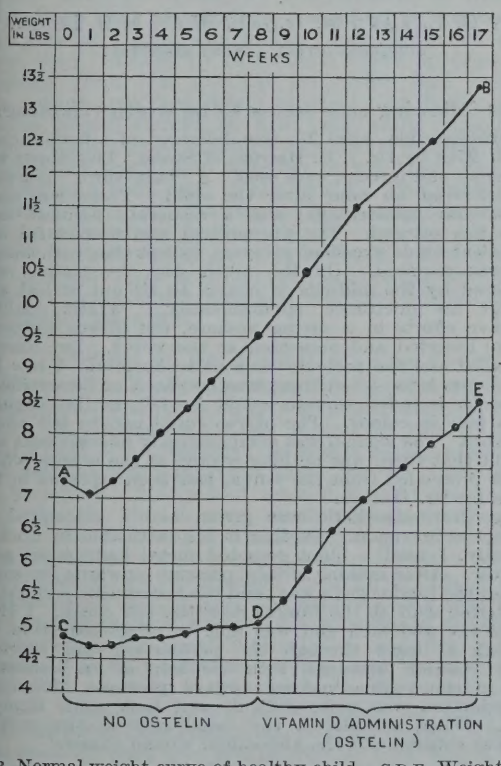
A NOTE ON THE TREATMENT OF PRIMARY OR ESSENTIAL MARASMUS BY OSTELIN.

By Kenneth McFadyean, M.R.C.S. Eng.

The term "primary" or "essential" marasmus is applied to passive wasting commencing at birth, or within two weeks of birth, and for which no cause other than a vitamin deficiency has been discovered. The existence of this condition has long been recognised, and Still has suggested that it is due to an inherent error of metabolism. Without careful investigation of a much larger series of cases than the present one, the part of heredity in causation cannot be determined. Still's statement, that he has seen successive children in the same family develop the condition at the same age, should be borne in mind. Every case is remarkable for the striking absence of all symptoms other than passive wasting, which will persist for months without giving rise to further symptoms.

In this series of cases, common causes of secondary marasmus, including lowering of body temperature and rickets, were carefully eliminated. In two cases the absence of rickets in the bones was established by X ray examination. All eight patients have been

Fig. 1.

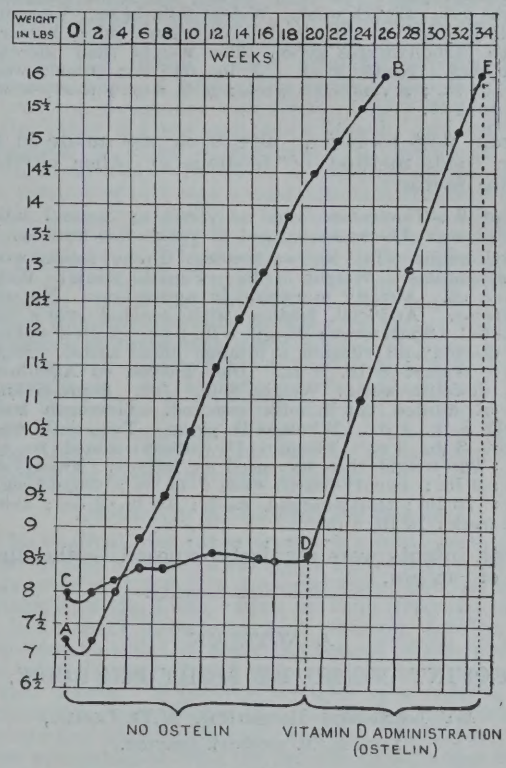

WEIGHT IN LBS
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17
WEEKS
13½ 13 12½ 12 11½ 11 10½ 10 9½ 9 8½ 8 7½ 7 6½ 6 5½ 5 4½ 4
A
B
C
D
E
NO OSTELIN
VITAMIN D ADMINISTRATION (OSTELIN)

A B, Normal weight curve of healthy child. C D E, Weight curve in Case 1. C D, Period of marasmus. D E, Period of administration of ostelin.

fed on a diet of scalded undiluted cow's milk. The writer's experience, in common with that of many other observers, is that milk thus raised to a temperature of 100° C. for a few minutes is sufficient in vitamin content for most children. Such a degree of heat has no influence on the vitamin A, B, or D content of the milk. Vitamin C is probably almost entirely destroyed, but is apparently of little importance. In essential marasmus the addition of vitamins A, B, or C to the diet fails to produce any benefit. The results of this series of cases suggest that the condition is invariably curable by the administration of vitamin D, but this is no proof that the absence of vitamin D is the sole cause of the condition.

The recent work of Steenbock [1] and of Chick and Roscoe [2] demonstrates the marked relative deficiency

Fig. 2.


WEIGHT IN LBS
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34
WEEKS
16 15½ 15 14½ 14 13½ 13 12½ 12 11½ 11 10½ 10 9½ 9 8½ 8 7½ 7 6½
A
B
C
D
E
NO OSTELIN
VITAMIN D ADMINISTRATION (OSTELIN)

A B, Normal weight curve of healthy child. C D E, Weight curve in Case 2. C D, Period of marasmus. D E, Period of administration of ostelin.

of vitamin D in ordinary cow's milk and its complete absence from the milk of cows fed on oil-cake. This deficiency is not increased in the smallest degree by scalding, for vitamin D resists oxidation even when exposed to 100° C. for 12 hours. The fact that vitamin D deficiency appears to be largely responsible for marasmus in young infants and for rickets at a later period accords with some of the recent experiments of Chick and Roscoe.[3] These workers showed that a diet deficient in vitamin D might result in arrest of growth, but that typical rickets is far from being an invariable result.

In all cases vitamin D has been supplied in the form of ostelin, a proprietary preparation of the unsaponifiable fraction of cod-liver oil. An analytical record of the preparation has appeared in The Lancet (1927, ii., 508).

Two cases are specially interesting as both children were regularly exposed to the sun's rays, and though both pigmented well, neither made any progress until vitamin D was added to the diet. One of these children was living under excellent hygienic conditions in the hands of a trained nurse. The second was in a nursing home for nine weeks from birth under careful and constant supervision.

Case 1.—The infant was delivered after artificial induction of labour at the end of the thirty-sixth week of pregnancy.

[1] Jour. Biol. Chem., 1922, liii., 21.
[2] Biochem. Jour., 1926, xx., 632.
[3] Ibid., 1926, xx., 137.

The mother, aged 41 years, had severe toxic albuminuria of pregnancy, which terminated fatally.

Birth weight 4 lb. 12 oz. Fed on cow's milk diluted—4 oz. of milk and 8 oz. of water in 24 hours. End of second week: Passive wasting was the only symptom. Weight 4 lb. 10 oz. Citrated whole milk was then given. Third week: No fresh symptoms. Weight 4 lb. 12 oz. Characteristic facies of marasmus. Vitamin C (orange juice) added to each feed. Fifth week: No fresh symptoms. Child strikingly marasmic. Weight 4 lb. 13 oz. Vitamin B (butter and malted carbohydrates) added to each feed. No orange juice. Seventh week: No fresh symptoms. Weight 5 lb. Eighth week: Weight 5 lb. 1½ oz. Vitamin D (ostelin) added to each feed. No orange juice, butter or malted carbohydrates given. The weight then increased as follows. Ninth week: 5 lb. 6½ oz.; tenth week: 5 lb. 13½ oz.; seventeenth week: 8 lb. 8 oz.; thirty-second week: 14 lb.

From first to last no alteration was made in the basic food, method of feeding, or other environmental factor.

CASE 2.—The infant was delivered by normal labour at full term. The mother, aged 23 years, was healthy.

Birth weight 8 lb. Natural feeding. End of second week: No symptoms. Weight 8 lb. Fourth week: Weight 8 lb. 8 oz. Already marasmic in appearance. No other symptoms. Artificial feeding with scalded cow's milk instituted. Sixth week: Weight 8 lb. 6 oz. A little sickness. Milk diluted and vitamin C (orange juice) added. Eighth week: Weight 8 lb. 6 oz. Diet altered to Allenbury's food. Twelfth week: Weight 8 lb. 1 oz. Some sickness. Diet of diluted cow's milk restored. Sixteenth week: Weight 8 lb. 8 oz. Whole milk given. Twentieth week: Weight 8 lb. 8 oz. Vitamin D (ostelin) added to each feed. The weight then increased as follows. Twenty-first week: 9 lb.; twenty-fourth week: 11 lb.; twenty-eighth week: 13 lb.; thirty-second week: 15 lb. 2 oz.; thirty-sixth week: 16 lb. 8 oz.

Both infants were regularly exposed to the direct rays of the sun.

A NOTE ON
SQUINT CURED BY SIGHT EXERCISE.

By KENNETH R. SMITH, M.D. LOND.,
LATE R.A.F. MEDICAL SERVICE.

THE two following cases of squint came to my notice while acting as medical officer in charge of troops at a barracks military hospital.

H. S., a boy of 15 attached to the band of the —th Dragoons, presented himself at sick parade early in May, 1927, on a question of his glasses. He had marked convergent strabismus, but good sight in each eye separately. He stated that he had been supplied with glasses at the age of 5 for the treatment of the squint, and had undergone two operations for its cure at the Central London Ophthalmic Hospital in 1924 and 1925. This statement was confirmed by reference to the secretary of the hospital.

He was treated by exercise in the following way. A number of ordinary playing cards were placed in three sections on an exerciser stand[1] so constructed that three cards were exposed in a row. The centre card is seen by both eyes, the card on the left by the left eye only, and the card on the right by the right eye only. The group is seen much in the same way as we see out of doors, farther to the left with the left eye, and farther to the right with the right eye, but with both eyes at the same time in all the intervening part. The three cards on the stand form a group of separate tangible things, not simply pictures. No lenses or prisms are used and the two eyes can be seen and their movements observed. The exercising consists in stating the number of cards seen and naming the details of each, then removing a card and again naming details, and so on through the pack. At first the boy saw four cards, the centre one duplicated; after a few days' training he saw three cards occasionally, but the diplopia did not altogether disappear in the first three weeks' training. He then had a rest for a month and recommenced sight training at the end of June. He saw three cards without difficulty in binocular vision, and after a few days he was put to reading exercises, using his glasses.

[1] The exerciser is called the binoscope, and is obtainable from Messrs. John Bell and Croyden.

In the reading exercises the commencement of each line is seen by one eye, the central part of it by both eyes, and the termination by the other eye only. He had no difficulty with the reading exercises.

I last saw him on July 19th; all signs of the squint had disappeared, and he stated that he could see far better than before, and no longer got headaches or tired with reading his music. Inquiry has elicited that his condition was equally satisfactory on Sept. 29th.

While H. S. was carrying out his training exercises, C. F., a boy of 14, with conspicuous convergent squint, presented himself for medical examination as a recruit to join the army. He had normal vision in each eye separately. He was asked whether he played games; his reply was "Yes." Cricket?—"Yes." Which do you do better, batting or bowling?—"Batting, the ball will go to one side bowling." This boy was tried with the exerciser, and the three cards were carefully covered until he was ready to see them, and he was asked, as they were uncovered, "How many cards do you see?" His reply was, "Four—no, three." The diplopia was there, but was immediately replaced by binocular vision. Games had apparently kept this boy's eyes alert and active, so that as soon as he saw with both at the same time central vision with both followed immediately. But playing games had failed to bring about in the course of years what the exerciser enabled him to do at once—that is, *to see with both eyes at the same time.*

His cricket record appears to indicate that one-eyed sight is less efficient when we are ourselves in motion than when we are looking at a moving object.

AN UNUSUAL CASE OF
INVERSION OF THE UTERUS.

By C. L. LANDER, *D.S.O.*, *M.C.*, M.B. LOND.,
SURGEON, ROYAL ALBERT HOSPITAL.

THE following case seems to be worth reporting.

A primigravida, aged 23, was delivered of a female child on Feb. 27th by Dr. I. E. Harries, of Stoke. The labour was prolonged, and forceps were used. A "battledore" placenta was delivered an hour after the child. There was some post-partum hæmorrhage, and a moderate perineal tear, which was sutured. The puerperium was uneventful and the patient made excellent progress, except that catheterisation was required. On the ninth day the patient was instructed by the midwife in charge to sit out of bed and attempt to micturate spontaneously. Whilst making expulsive efforts in a sitting posture, the uterus suddenly became inverted and presented at the vulva. Dr. Harries was called and the patient was sent to hospital. I saw her a few hours later, when there was no shock or hæmorrhage. A smooth rounded tumour could be felt in the vagina; it was pale in colour. The uterus could not be felt above the pubes. The woman was comparatively unconcerned and thought that there was nothing wrong, as the uterus, which at first protruded from the vulva, had been replaced in the vagina by Dr. Harries.

A general anæsthetic was given, and I attempted to reduce the inversion. Finding it impracticable to do this manually, I used a blunt rounded metal instrument as a repositor. After making steady pressure upwards for some minutes the fundus gave way, and the instrument perforated the uterine wall at the fundus near the left cornu. I then opened the abdomen and was able to effect reduction by inserting a finger through the perforation and exerting steady traction upwards, with the help of an assistant's hand in the vagina making upward pressure. Even so, the reduction was quite difficult and took some time to effect. When completed, the small rent in the uterine wall was sutured and the abdominal wound closed.

The subsequent progress of the case was quite uneventful. At the time of the operation there was nothing apparently abnormal in the size or consistence of the uterus examined from both aspects.

BARNSLEY HOSPITAL EXTENSION.—A new wing of the Beckett Hospital, Barnsley, will be opened on Feb. 8th by the Duke of Northumberland. Towards a £40,000 extension scheme a grant of £13,400 was made by the Miners' Welfare Fund with a suggestion that this money should be used to provide an addition to the hospital which should be directly identified with miners and their families

Medical Societies.

ROYAL INSTITUTE OF PUBLIC HEALTH.

Lord Justice ATKIN presided at a lecture given at this Institute on Jan. 18th by Mr. ROLAND BURROWS, Recorder of Chichester, entitled

THE MEDICAL PRACTITIONER IN RELATION TO THE ADMINISTRATION OF JUSTICE.

Mr. Burrows said that many medical men undoubtedly felt aggrieved at the way in which they were affected by the processes of law, but it must not be forgotten that the interests of justice were paramount, for it represented the lubrication of civilisation. The problem before the medical practitioner might be essentially different from that before the judge and jury, although the two problems were really one, viewed from entirely different aspects. The doctor was concerned primarily with treatment; the court only with liability. For both purposes it was necessary to ascertain the facts as accurately as possible. A medical man called in to a patient alleged to be suffering from some mental disorder would consider, consciously or unconsciously, first of all whether he was so suffering and then whether he needed treatment, and if so, what the form of that treatment should be. The court would be concerned with the question whether the man was or was not responsible for his actions. The point at which he should undergo treatment occurred at a different stage from that at which he ceased to be responsible. The general public was rather more disturbed about what they believed to be medical views on crime and insanity than the medical profession had realised. One reason was that many medical men held that no insane person should be held criminally responsible. Others again talked in such a way that it was impossible to discover from them whether or not there was such a thing as a sane man in the world. The public were a little alarmed at what would happen in the administration of criminal justice if such views prevailed; it would certainly fall to the ground. The lecturer thought that most medical men held sane views about insanity, but the extreme and startling always caught the public attention.

Functions of the Medical Man in Court.

When a medical man came into court his function was to assist the court to give a correct decision on the facts. In treating a patient it was for him to decide to the best of his ability; he was a seeker after truth and responsibility lay with him. In the court he was an assistant. Many had argued that it was absurd to leave the decision of medical matters to a lay court, but it was the immemorial practice of this country to give an accused person the right to have questions of fact determined by a jury. The medical problem was on precisely the same footing as scores of other problems that arose in all branches of knowledge. Moreover, in the great majority of cases the medical was not the only problem arising, and the decision of the court must be a decision upon the whole of the facts. Whatever be its justification, we were faced with the actual working of the judicial system, whereby the medical man was not entrusted with the duty of deciding any point of medical knowledge. That working was not likely to be altered by any movement or argument; the protection of the public, the judge and the jury, would probably be maintained, at all events so long as present conditions lasted.

In the Supreme Court the power of calling in an assessor was hardly ever exercised except in the Admiralty Division. In county courts the medical assessor appeared in workmen's compensation cases. The assessor was not a judge; he decided nothing, although he was, of course, under the judicial duty of being fair and impartial. The court could, in fact, disregard the opinion of the assessor altogether, and had done so. The assessor was most valuable when the judge was sitting alone or with colleagues, and was very difficult to work when the judge sat with a jury. The jury were the judges of fact, and the assessor's function became that of advising the advisor of the jury. It was doubtful whether he could be of any real assistance; the medical man best assisted the jury from the witness-box. The assessor suffered from the disadvantage of not having been called in to examine the patient at the time. The cause of justice could not possibly dispense with the medical men who came on the scene and observed and prescribed at the time of the event. One principle governed all witnesses, that of telling the truth. The fact that, in practice, a witness was always called by one side or the other did not cast upon him in any way the obligation of being a partisan. All witnesses were called in to assist the court in arriving at the truth. The witness of fact was a man who had observed some fact in issue or relevant to the issue, and his duty was confined to informing the court of the facts which he had so observed. There were strict limits within which he was entitled to inform the court of his inferences and opinions. In actual practice it was impossible to confine a witness strictly to observed facts; even the plainest statement was compounded of what a man had observed and what he had inferred from his observations. An expert, on the other hand, was called because he had special skill and knowledge and could give his opinion on the facts. The significance of an observed fact might only be apparent to men with special knowledge and training.

Evidence of the General Practitioner.

The medical man often occupied a position midway between the witness of fact and the expert. He was frequently sent for at a material time, but the interpretation of the facts which he thus observed called for his special knowledge and training, and he was permitted to give the court the benefit of his opinions. The term "expert" was unfortunate, for it was used in two senses. A medical witness as a witness was necessarily expert, but within the profession there was another and smaller class of experts. The lecturer had often sympathised with the general practitioner called on to give evidence as an expert and expected to be an expert in a particular branch of knowledge where he claimed no such position. Lawyers were apt to pay insufficient attention to the circumstances under which a medical man was called in—cases of emergency where something had to be done at once, where there was no time for detailed examination or precise diagnosis. He might never see the patient again until called to court, and in the more leisurely atmosphere of the law he might be expected to be precise and detailed. Here came in the essential distinction between the problem of the doctor and the problem of the court; for purposes of treatment—the doctor's primary concern—the examination might be comparatively cursory, whereas to give proper evidence, to assist the court, it ought to be more lengthy. A good deal of resentment was caused by the practice of cross-examination, but the other party must, in fairness, have an opportunity of checking the accuracy of the evidence, and there was nothing to differentiate the medical witness from any other expert. It would not advance the cause of justice for him to give his evidence in the form of a report, and to give evidence orally without cross-examination would involve a complete change in the existing procedure. If the doctor were called as a witness by the court, as had been suggested, he would be cross-examined by both parties instead of by one. Moreover, cross-examination was an advantage to a competent and properly prepared witness, enabling him to clarify and expand his evidence and remove misconceptions. The honest witness would come out of the ordeal better than when he went in.

Conflict of Loyalties.

When a medical man was asked to reveal matters confidential between himself and his patient the rule

had been laid down that no medical man could refuse to answer a question. The "privilege" of the lawyer was really a privilege of his client, and essential to the administration of justice. The interest of justice was paramount. If the witness was called by his patient, the patient had to risk disclosures which he did not desire. Civil actions often put the general practitioner in a most difficult position. Anything which tended to prevent people being frank with their doctors was not to the public advantage. Cases must, however, be decided on a general rule, and the general rule always spelt hardship in particular cases. The matter had been extensively discussed; the lecturer's view was that there was no sufficient cause for amending the present rule, relaxation of which might lead to fraud and injustice.

Advice to the Medical Witness.

The doctor unused to giving evidence should remember first of all that his primary duty was to be accurate. He was called upon to assist very materially in the cause of justice, his assistance was regulated by the rules of procedure, applied by persons skilled in the working of them; he could therefore leave the conduct of the case to them. He should make himself acquainted, at least in outline, with the way in which his evidence could assist the court—i.e., with the issue to be tried. Then he should distinguish carefully between evidence of observed fact and inference. Fact easily flowed into inference, inference into opinion, and opinion into mere hypothesis. The experienced witness confined himself, in the first instance, to facts and to inferences which could with certainty be based upon those facts, leaving less certain inferences and opinions to be elicited by the lawyers if they wanted them, or were rash enough to ask for them. A witness was in a strong position when he said "I have observed certain facts; it follows from those facts that such a state of affairs exists," and was prepared to justify his statement both positively and negatively. If he could not draw one positive inference he should say what were the possible ones and then go on to state which, in his opinion, was the right one. If pressed further he should state his opinion definitely, openly, as a matter on which he would profess to give an opinion. He must expect to be challenged by reference to text-books, and should avoid relying more upon what he had read in works of authority than on his own observation and skill.

In conclusion Mr. Burrows urged the formation of a central medico-legal institute where experts could be trained and matters of mutual interest discussed by both professions.

Dogmatism a Disadvantage.

Lord Justice ATKIN said that no class of evidence was viewed more sympathetically by the bench than that of the doctor. An extraordinary number of cases, and an increasing number, seemed to depend upon the true appreciation of medical facts. There was no doubt that the ordinary practitioner was exposed to great difficulty when called upon to give evidence, and he (the speaker) had often sympathised with the medical witness. Although it might seem a paradox, the advocate who had especially prepared his case might be much better equipped than the expert to deal with the matter. The golden rule for the medical witness was to admit uncertainty if he felt it. Nothing could put a doctor in a firmer or more convincing position with the court than his refusal to be absolutely certain about everything. Indeed, if a man wanted to convince a jury it would be worth while saying "I am not quite sure," or "It may be so, but I don't know," once or twice whether he meant it or not! Generally speaking, bench and advocates trusted a doctor as he deserved, and he might face his duty in court with equanimity if he observed that simple rule. As the law stood at present a doctor was not privileged to maintain his patient's confidence. The claims of justice on one side had to be weighed against the claims of public health on the other. His lordship himself was of the opinion that in some cases, notably those connected with venereal disease, the claims of public health far outweighed those of justice. He would be very glad to see some change in the law, even that very limited alteration proposed in Dr. Graham Little's Bill. The courts allowed certain facts to be withheld—for instance, those disclosed to a legal advisor were withheld in the interests of justice, and those which concerned the State were withheld without any reference to the administration of justice. He failed to see why it might not be just as much to the interest of the State to withhold some facts dealing with the health of the individual as to withhold facts relating to armaments. He recognised the extreme public importance of mutual understanding between lawyers and doctors, and familiarity with each other's problems. He would like to see a general system of education in medico-legal matters to which both practitioners and advocates should have recourse. Every person concerned with the administration of justice should be instructed in the principles of medical jurisprudence.

SOCIETY OF MEDICAL OFFICERS OF HEALTH.

AT a meeting of this Society held on Jan. 18th, at which Dr. JAMES WHEATLEY, the President, occupied the chair, Prof. R. H. A. PLIMMER opened a discussion on

RECENT ADVANCES IN THE KNOWLEDGE OF FOOD.

He described a series of experiments on the vitamin B requirements of birds and animals, with his deductions therefrom. Lists of beri-beri-preventing foods had, he said, been prepared by several workers, but they had not established the quantities of these foods that were required in relation to the B-deficient part of the diet. The experiments he and his colleagues had performed had shown that a pigeon on a staple diet of 30 g. of white rice needed, for the prevention of polyneuritis, the addition of either 3 g. of lentils or egg-yolk, 4 g. of barley, 5 g. of brain, 20 g. of muscle, or 35 g. of milk. The latter two quantities approached the bird's total requirement of foods. The amounts of wheat germ (bemax) or yeast extract (marmite) required were about equal, viz., 3–5 per cent. of the total dried weight of the diet. The figure for dried egg-yolk was 18 per cent. The B-vitamin content of the diet was not absolute, but must be increased with the increase of diet of growing birds; this finding harmonised with the observation often made in the East that beri-beri appeared more readily in persons with a large appetite. Further experiments had shown that a definite relationship existed between the quantity of vitamin B required and the quantity of protein, of fat, or of carbohydrate consumed. The standard diet used consisted of fish meal, white rice, and cod-liver oil, and was thus free of B but sufficient in A and D. Birds did not require C.

On 90 parts of rice, 5 of fish-meal, 1 of cod-liver oil, and 9 of yeast extract, birds could be raised from a day old to maturity. When the fish-meal was raised to 30 parts, six birds out of eight died. Twenty parts, however, were tolerated if the yeast were raised to 16 parts. For the experiments on fat, cotton-seed oil was used to obviate any excess of A and D from cod-liver oil. It was found that the diet had to contain 16 per cent. of dried yeast to keep the birds in health. When the quantity was reduced to 12 per cent. the birds fared very badly. From this Prof. Plimmer inferred that children taking cod-liver oil ought to be given a substance rich in B-vitamin at the same time. The experiments on excess of carbohydrate in the diet had given similar results, and the series had demonstrated that each component of the diet had to be balanced by an adequate quantity of vitamin B. Post mortem the birds that had died from B deficiency, even if they had not shown symptoms of polyneuritis, had revealed signs of intestinal stasis with pale hearts and enlarged livers.

Subsistence Rate of Vitamin B.

The constant ratio shown by the experiments to be necessary between the total amount of food consumed and the amount of food containing vitamin B was, for chickens, one part of dried yeast to 8 or 12 parts of food. Pigeons did well on a ratio varying from 1 in 10 to 1 in 24. Rats could subsist adequately on 1 part in 48. No experimental data were available for man, but calculations based on the beri-beri-producing diets of the Japanese troops during the siege of Port Arthur, and on those of our own men at Gallipoli, suggested a ratio of between 1 : 10 and 1 : 24. For safety the higher figure should be taken. It was not so easy as most people believed to eat a sufficient quantity of vitamin B, as was shown by the work done on standardising foods in terms of their B value. Assuming a staple diet containing no vitamin B at all, the amounts of B-containing foods necessary were: marmite, 10 per cent.; peanuts, 20 per cent.; pulses, 27 per cent.; white barley, almonds, and chestnuts, 40 per cent.; egg-yolk, 50 per cent.; and potato, 80 per cent. Carrots and onions contained a little vitamin B, but green cabbage none. Cocoanut, unlike other nuts, was useless.

Vitamin B and Cell Nuclei.

Prof. Plimmer commented on the fact that young animals needed more vitamin B than did adults, and suggested in explanation that one of the chief functions of this vitamin was to build and repair cell nuclei. All the substances isolated as vitamin B belonged to the group of nucleic acids.

In the absence of Prof. J. C. DRUMMOND, Dr. M. J. ROWLANDS showed a number of slides illustrating the remarkable atrophy and disappearance of areolar tissue and of muscle from the intestinal walls of animals fed on B-deficient diets (see p. 180). He also mentioned work on rheumatoid arthritis read before the Royal Society of Medicine.

Dr. MARGARET EMSLIE pointed out that white flour was much easier and cheaper to use for cooking and baking, and would therefore probably continue in use among poor families. She had been greatly impressed by the value of bemax, at infant welfare centres, for anæmia, languor, constipation, and cardiovascular depression.

The PRESIDENT complained that persons in high positions, both in the Ministry and in the medical profession, had made assertions about food which were entirely unjustifiable. When interference with food, such as fractioning or sterilisation, was in question, the burden of proof ought to lie on the person "committing the offence." McCarrison's work had shown that natural foods generally contained the constituents necessary for life, but that danger arose with the first attempt at fractioning. Many persons said—apparently without any evidence—that it did not matter whether one ate wholemeal or white bread under present conditions, because of the variety of the modern diet. A labourer on 40*s*. a week ate hardly anything but bread, margarine, and a little sugar; for him eggs and other vitamin-B containing foods were out of the question. Moreover, very few of these foods, according to Prof. Plimmer, would do more than balance themselves.

In answer to questions, Dr. ROWLANDS stated that detoxicated embryo of wheat would cure even advanced case of degeneration of the stomach wall, and had been very beneficial in cases of rheumatoid arthritis.—Prof. PLIMMER considered that it was not necessary to balance every meal, so long as the whole day's food was properly balanced. Beer, he said, was so thoroughly filtered nowadays that it contained no vitamin B. The trouble in balancing the carbohydrate part of the diet arose from the sugar, which was highly concentrated, much more than from the white flour. He had never noticed any harm resulting from even an unlimited use of vitamin B.

MEDICAL SOCIETY OF LONDON.

TREATMENT OF PERNICIOUS ANÆMIA.

AT a meeting of this Society held on Jan. 23rd, Mr. HERBERT W. CARSON, the President, in the chair, Prof. F. R. FRASER opened a discussion on the treatment of pernicious anæmia, which, he said, practically meant the Minot-Murphy treatment. Feeding with liver had so altered the outlook of treatment and the prognosis of the disease that it was necessary to readjust one's attitude in regard to it. Last summer Minot and Murphy reported a larger series of cases than those with which they launched their first contribution—i.e., 105 cases—and confirmed the good results of their first set. They were also now able to announce the preparation from liver of a non-protein, non-iron-containing extract, which appeared to have the same action as had whole liver. That shifted ideas from a matter of mere diet to one of specific action. After the treatment not only was there a marked remission of the symptoms in a few days, but also a great change in the blood picture. Minot and Murphy were largely led to try liver for pernicious anæmia because it had many similarities to such diseases as sprue, pellagra, and beri-beri, and liver was beneficial in those, especially in sprue. At St. Bartholomew's Hospital, said Prof. Fraser, 19 cases of pernicious anæmia had been given the liver treatment. Six of those patients, however, were in the remission stage when the treatment was started, and in four others the observations were not complete or other methods of treatment were also used.

After taking half a pound of whole cooked liver, there occurred a marked temporary rise in the reticulocytes. This rise reached its maximum and then fell rapidly, and there followed a steady rise in the red cells and the hæmoglobin until they approached the normal. Coincidently there was a striking improvement in the general condition of the patient, especially, perhaps, in the mental condition. In two cases in which no other diagnosis than pernicious anæmia could be arrived at the treatment failed. One of those patients died, and the post-mortem examination provided no alternative diagnosis. The ten patients who were either in the remission stage when they came under observation or had had other forms of treatment than liver, had now been under observation for three to six months, and the results in them had been good; four had now a red cell count of over 5 million, two of over 4 million, one over 3½ million. One patient could not take the liver satisfactorily, but at the end of five weeks she had over 3 million reds and hæmoglobin 96 per cent.; she could not be observed longer. In one case the treatment had to be stopped because of heart trouble. One patient came under observation while having arsenical treatment, and it was not for some time that liver treatment was commenced. He did very well as judged by the symptoms, but at the end of four months he got acute appendicitis, perforation occurred, followed by peritonitis, and he died. At the time of his second admission with appendicitis four months after liver treatment was begun, the red cells were 5,100,000, the hæmoglobin 95 per cent., and the white cells 13,400.

There was a striking uniformity of immediate results of liver treatment in all the published series of pernicious anæmia, and equally remarkable was the fact that no such action ensued in the case of secondary anæmia. Here, therefore, was a therapeutic principle of which the profession had had no previous knowledge or suggestion. Sufficient time had not yet elapsed to enable judgment to be formed as to the capacity of liver to maintain these patients in the high condition of health to which it had restored them, or to prevent relapses. Minot told him that of 150 cases which had been followed for longer than three years none who had taken the liver treatment in the amounts recommended had relapsed.

Some showed on occasions a small decrease in red cells, but pushing liver at that time resulted in a restoration of the former figure. Studies by Peabody on the bone-marrow in pernicious anæmia showed that in the relapse stage of the condition the marrow was crowded with megaloblasts, which failed to come to maturity. Examination of bone-marrow in the remission stage produced by liver treatment showed the megaloblasts passing on to the megalocyte stage. Hence Peabody suggested that liver acted by imparting a stimulus to the developing red cells, and so enabling them to mature.

It was still uncertain what effect liver had on the nervous system. Though in the cases at St. Bartholomew's Hospital progressive changes had appeared during the liver treatment, it was possible that the approach of the blood to the normal and its maintenance in that state for some time would stay nerve changes. There was no evidence that the achlorhydria disappeared as a result of liver treatment; certainly it was present long before the anæmia became an entity. This fact rendered necessary the general treatment of the patient as heretofore, as a supplement to this new therapy, and especially the administration of hydrochloric acid and the giving of a generous and full diet. Before long, a reliable marketable extract should be on the English market; firms were already making it, and had consented to hold up its issue until the Medical Research Council was able to certify that the product was effective. When simple full liver was given prolonged boiling should be avoided.

Discussion.

Sir WILLIAM WILLCOX agreed that the liver treatment of pernicious anæmia was a great discovery. He commented on the similarities between sprue and pernicious anæmia, the former showing a definite streptococcal toxæmia and sore tongue. He had personally treated several cases of pernicious anæmia on these lines. These patients evinced a striking tolerance to liver, and it was remarkable how quickly the jaundice cleared up, the icterus index falling to normal. The liver treatment seemed also to act as an intestinal corrective, as there did not seem any necessity to resort to colon lavage or aperients, and the offensiveness of the stools was quickly lost. Under liver treatment, not only did leucopenia disappear, but the total leucocytes became normal. As yet no adequate explanation was forthcoming as to why liver acted in this way. He urged that the profession should not cease carrying out the other measures which had been found effective before this discovery was made; certainly the search for septic foci should be continued all over the body. Even now, transfusion might lift a patient over the stile and enable him to react better to the liver treatment. The giving of hydrochloric acid should not be abandoned. He was aware that for many years arsenic had been a kind of sheet-anchor in the treatment of pernicious anæmia, but nervous symptoms were then very apt to occur, and often he had been puzzled to know whether a patient's neuritis was due to the disease or to its treatment by arsenic. It was probable that arsenic and arsenobenzol treatment of pernicious anæmia would now cease.

Dr. HERBERT FRENCH said he was able to confirm what had been said from his own limited experience. In one case during seven weeks the hæmoglobin rose from 35 to 95 per cent., with no other treatment than that of liver by the mouth. This patient preferred it uncooked, and he was able to take it in a sandwich with a little watercress. Other and older treatments, he agreed, should not be forgotten; he remained in favour of transfusion, and thought it should be employed at an early stage, when the return to normal would be found steady and progressive. He preferred to give three transfusions of a pint each at intervals of about three weeks. That should now be supplemented by giving liver. While he had sometimes given arsenical treatment he had not found "606" of much use, and there was little necessity for trying it now.

The PRESIDENT said stress had been laid on the need for attacking cases of pernicious anæmia early, but nothing had been said about the early symptoms, an account of which would be welcome. Thirty-five years ago Dr. Samuel Gee had said one should never make a diagnosis of pernicious anæmia until malignant disease of the stomach had been definitely excluded—a very wise statement in days when biochemistry and X rays were not available as working aids.

Dr. WALTER BROADBENT spoke of two cases of pernicious anæmia under his care which did extraordinarily well with liver treatment plus a good deal of hydrochloric acid to drink.

Dr. R. A. YOUNG spoke of a profound case of the disease which was under his care. The man, aged 44, preferred to take the liver raw, with orange-juice. His return to a normal blood count was more rapid than was the disappearance of the symptoms. There was a striking rise in the eosinophile count. Possibly when liver was taken raw there was a risk of some parasitic infection. He had had a case of pernicious anæmia in which 0·2 g. doses of novarsenobillon produced a dramatic improvement; but as usual the achlorhydria persisted.

Dr. G. W. GOODHART spoke of work done at University College by Miss J. M. Vaughan and himself. He advised against making extract of liver substance on a small scale; it was too expensive in time, labour, and money. Ten cases had been treated under him with the extracts, but in only three had the red count gone up to over 4 million; there was a much quicker response in the hæmoglobin; most of the patients had retained their high colour-index. It was usual to assume that if an extract did not produce good results in 10 to 14 days, it was not good, but he thought a greater latitude should be given, as in one case, which had whole fresh liver treatment for two months without showing response, immense benefit occurred after three months.

Dr. P. B. SPURGIN gave a recipe for liver soup, and directions for preparing and cooking it.

Dr. PARKES WEBER asked whether observations had been made on cases of acute aplastic anæmia fed with liver. The two conditions seemed to him to be of similar nature.

Mr. ZACHARY COPE spoke of a case of secondary anæmia following massive intrathoracic suppuration which did not benefit by blood transfusions, but showed a rapid improvement when fed on fresh liver. He asked whether bone-marrow had a similar effect in pernicious anæmia.

Dr. C. E. LAKIN referred to a case of carcinoma of the stomach which despite the malignant disease showed an increase of red corpuscles after liver feeding.

Dr. BROWNING ALEXANDER thought liver-efficiency tests should be perfected. He felt sure pernicious anæmia was an infection, and the old treatment for it should not be lost sight of.

Sir LEONARD ROGERS drew a parallel between sprue and pernicious anæmia, and related cases in which liver soup produced a dramatic improvement in sprue. In the latter, too, a single transfusion of blood might bring about a cure.

Dr. LANGDON BROWN said that persistence of the achlorhydria in pernicious anæmia, despite the liver treatment, was the experience of most. In one patient of his who was given the treatment the leucopenia still persisted, therefore he could not consider her cured, though her red cell count was 4½ million. Liver treatment had not been successful in human beings suffering from secondary anæmias. He was not inclined to cease giving hydrochloric acid.

Prof. FRASER briefly replied.

ROYAL SOCIETY OF MEDICINE.

SECTION OF ELECTROTHERAPEUTICS.

AT a meeting of this Section, held on Jan. 20th, with Sir HENRY GAUVAIN, the President, in the chair, the subject of

DIATHERMY IN RELATION TO CIRCULATORY DISTURBANCES

was opened by Prof. SIDNEY RUSS with a paper on the physics of diathermy. A few years ago, he said, he carried out some observations on a volunteer, a normal man with a normal temperature to commence with. He was able to pass a current of high frequency through that man, without raising the temperature as much as one degree. The body had a remarkable capacity for dealing with heat introduced into it so that no rise of temperature followed. Diathermy might prove to be an effective method of heating the body in cases of operation, when he believed the temperature of the operating theatre was conditioned by the need to keep up the temperature of the patient. Recently d'Arsonval had brought forward observations on the way in which heat was generated in different liquids by the passage through them of high-frequency currents. He used for this purpose saline, drinking-water, serum, and urine, and having sent a current through them the solution was diluted and the frequency of the oscillations increased, so that the same current resulted. All four fluids gave very similar physical characteristics. The heat developed in these solutions rose more or less on purely physical lines, but by diluting the liquid progressively it tended to lose its electrolytic properties and to become more dielectric. It was important, in the clinical use of diathermy currents, that medical men should have at their disposal a very accurate check on the voltage being employed by them. It was not difficult to so operate these circuits that a large current was sent with a comparatively small voltage, or a smaller current at a high voltage. The heating under those two conditions would be very different. Much of the knowledge as to the behaviour of large high-frequency currents in the body was due to Dr. Cumberbatch. It could not be assumed, however, that a strict parallelism held for strong as compared with weak currents. A chance observation by the speaker led him to believe that nerve-tissue was a very good conductor for weak high-frequency currents; that, however, needed corroboration. On one occasion a weak high-frequency current—i.e., less than 0·2 of an ampére—passed from hand to hand of one of his colleagues for not half a minute. Pins and needles sensations followed, and next morning a large part of the surface of the arm was devoid of sensation. Examination of cutaneous sensation showed an area of anæsthesia on the inner and ventral aspect of the right forearm, and this was bordered by a band of paræsthesia, the whole affected area corresponding with the cutaneous distribution of the ventral fibres of the internal cutaneous nerve. A cervical rib was the cause of the phenomenon.

The Clinical Aspect.

Dr. T. F. COTTON spoke of his experience of the application of diathermy in cases of disturbance of the cardiovascular system. Its value in the latter seemed to depend upon the production of heat in the body; he thought electrotherapeutists generally were agreed that this heat generation and its effect on the deep tissues of the body was the only special effect of diathermy. Lewis and his co-workers had provided a series of accurately recorded observations on the response of the blood-vessels of the skin to heat stimulation, and these studies should help to explain the mechanism of the response of the deep blood-vessels to thermal stimuli. Lewis considered that the reaction by active dilatation of the arterioles, venules, and capillaries to changes of temperature was a dual one. Heat lowered the tone of the walls of the small vessels, and the predominating influence of heat was to increase the concentration of vasodilator substances in the tissue spaces. This reactive hyperæmia with the increased blood flow was a mechanism of fine adjustment which governed the nutrition of the tissues. The metabolites released in the tissues had a histamine-like action, and were normal constituents of the tissues. When constrictor influences predominated, causing an alteration in the peripheral circulation, the release of the vasodilator substances caused the small vessels to dilate, the normal circulation was restored, and there was a better blood-supply to the tissues. There was also a reflex of central origin, which played a rôle in dilating small vessels and so improving the circulation. There occurred such a disturbance of circulation in the condition known as intermittent claudication, and hence diathermy should, theoretically, be a valuable remedial agent in this condition. He had seen the condition improved by diathermy and the pain lessened, but some subjects of it were refractory to the treatment.

Another condition in which constrictor influences predominated was acrocyanosis, but this diathermy only temporarily relieved; probably the constriction was of central origin.

With regard to high blood pressure and its treatment by diathermy, little was really known about blood pressure. But from the point of view of treatment, he thought patients with hypertension could be divided into two main groups: (1) those having symptoms which were directly due to the high blood pressure; (2) those whose symptoms were due to other causes. Patients belonging to the first group were definitely better when the blood pressure had been lowered some 20 mm. of mercury, and some of these had gross and obvious signs of structural disease of the cardiovascular system. Diathermy was of value in lowering the blood pressure. In the second group were patients whose predominant condition was renal disease, with renal insufficiency, and it was not rational to use diathermy for these; lowering of the blood pressure altered the permeability of the kidneys. In the same group were patients with symptoms of myocardial exhaustion due to auricular fibrillation. In these the blood pressure level could be affected by altering the pulse-rate by digitalis, but no good could be wrought by diathermy.

A further important group of patients were subjects of angina pectoris. In these, with high blood pressure, diathermy was a valuable therapeutic agent. Angina he looked upon as a symptom of myocardial exhaustion, frequently associated with coronary changes, but he did not think that the lowering of the blood pressure was the only factor in the improvement; possibly a more important factor was the reactive hyperæmia of the small vessels of the coronary circulation due to the application of heat, the quickening of the pulmonary rate of flow improving the nutrition. Another type of angina was that labelled "secondary angina," in which was no structural disease. Here it was probable there was a nutritional disturbance of the heart function, and the origin of it might be toxic. Patients whose pain prevented them carrying on their usual vocation, but who showed no sign of disease, were helpfully treated by diathermy, though other treatments were also good.

Dr. JUSTINA WILSON reminded members that arterial pressure could be raised either by increasing the power of the myocardium or by heightening the peripheral resistance. Of late years many workers thought that the basal condition was a functional disturbance in the walls of the smaller vessels, and that all the other phenomena were merely signs of enormous strain existing on the cardiovascular system. The primary cause was neither renal nor cardiac; in a large group the condition was due to toxins. The high blood pressure of lead poisoning, of eclamptic conditions, of prostatic enlargement, and of chronic interstitial and glomerular nephritis were well known. While she was working at the National Hospital for Diseases of the Heart it was found that in 40 per cent. of the cases there no toxic cause was

found for the increased blood pressure. The toxins in the other 60 per cent. were those arising from metabolic disease, syphilis, arterial sclerosis, climacteric, and other endocrine conditions.

The modern view on the pathogenesis of the condition under discussion was that it was a disturbance of the balance of the neurovascular mechanism, with some association of tonic and contractile function of the walls of the capillaries; 75 per cent. of the patients were found to have cholesterinæmia. In cases of chronic arterial hypertonia cerebral hæmorrhage frequently occurred. The cholesterinæmia thickened the membranes covering the vessel walls, so preventing their relaxation, and hence they were kept in a state of tonic arterial spasm. That, in turn, led to anæmia and changes in acidity, and to autolysis and necrosis.

There might be no symptoms of this condition for years, then certain effects on the nervous system might become evident, such as morning malaise, motor unrest; and this was later supplanted by great depression. Some patients manifested vertigo quite early, or at least giddiness, concentration and working-power diminished, and there was a condition of vasomotor angina. Renal involvement came later. At a fairly early stage the heart hypertrophied, then dilated, the apex-beat was heaving and displaced, the first sound was short, and the aortic second sound was ringing. Watching cases by means of X rays over a period of years one could see the development of atheromatous changes in the aorta which had not been there before. It could not be said, on her experience, that cerebral hæmorrhage was common in these cases, but 13 per cent. of a large series ended in true cerebral hæmorrhage—some by death, some by complete disablement.

Usually the symptoms came on about middle life. There were often quite long periods of spontaneous remission, which gave a fallacious idea as to results of treatment, as a natural remission of the kind might be attributed to the particular form of treatment being employed. In the third period of the condition the blood pressure was constantly anything from 180 to 210 mm., and later still this might mount up to even 240. Blood pressure curves should be taken four or five times a day, as extraordinary variations were noted at different times in the day.

There was no particular treatment for the first stage of the condition, while in the advanced stages the efforts had to be directed to giving relief. Much could be done to relieve symptoms and prolong life. When the blood pressure was very high, however, very little could be done by physiotherapy. Patients with this condition needed rest in the fresh air and away from their customary environment. Diet was important—i.e., practically vegetarian—fermentative substances and anything which further insulted the overburdened heart by loading the stomach being avoided. Oxygenated baths were found to somewhat lower the blood pressure. In cases of chronic constitutional high blood pressure ultra-violet light had proved, in her hands, disappointing. In many of the conditions she had referred to diathermy was helpful, and it was most useful in intermittent claudication, as it relieved pain so well, though it should be combined with a thorough treatment of the lymphatics. She was a believer in massage for the condition—i.e., a very light superficial stroking of the lymphatics of the skin, with vibratory treatment of the receptaculum chyli. As diathermy produced reactions in many sufferers from angina it was not advisable to give them daily applications of diathermy; sometimes pain and temperature followed the séance.

Dr. AGNES SAVILL spoke, from her own experience, of the benefit obtainable in a tired and exhausted person by the use of a current of high voltage; no hot bath or tonic produced results in any way comparable. She proceeded to give details of two patients on whom she had made many observations over a long course of treatment. One was a man the subject of angina, of heavy build and plethoric appearance, of whose blood pressure she had 59 records. The only relief he experienced from his pain was after a 10- or 12-minute high-frequency treatment on the condenser couch. After these visits the pulse always felt softer and more natural to the examining finger. In the other case, in a man 67 years of age, the story was similar.

Dr. ADOLF SCHOTT (Bad Nauheim) spoke of a case of severe angina pectoris, for whom no treatment, even nitroglycerine, did good. But in a comparatively short time after commencing diathermy the attacks were relieved. In another case of the same kind, however, diathermy did no good; it even started attacks, and only nitroglycerine brought benefit.

Dr. E. P. CUMBERBATCH said that in some experimental work at St. Bartholomew's Hospital it was found that the distribution of the heat applied seemed to be unaffected by changes in the voltage or by the frequency of the oscillation. He expressed his objection to the use of the term "high-frequency treatment of disease," as high-frequency currents were only of use in treatment if they produced heat in the body. The correct term to apply to such treatment was diathermy. The data required to be known were the ampèrage of the current and the temperatures produced. The result in circulatory disturbances was due to the heat generated, and what was important was the acceleration of the circulation through the tissues. One result on the blood of the application of heat was a lowering of its viscosity. Possibly the heating of the skin and the cutaneous nerve-endings produced a reflex vasodilatation of the blood-vessels of the interior. Some cases of intermittent claudication, he agreed, did well under diathermy, but others did not. The cases having hypertension which reacted best to diathermy were those in which renal disease was not present. Still, by applying diathermy to the kidney region specially, so as to promote the flow of blood through the organ, he had derived some success even in those cases.

Dr. G. B. BATTEN thought the idea that the sole effect of diathermy currents on the body was the production of heat was due to the fact that this effect was the easiest to measure. As sensitive instruments came to be devised in the future he thought it would become possible to measure other effects too.

Prof. RUSS and Dr. COTTON briefly replied.

SECTION OF MEDICINE.

AT a meeting of this Section, held on Jan. 24th, the chair was taken by Dr. H. THURSFIELD, Vice-President, and a discussion on

CARDIAC INFARCTION

was opened by Dr. JOHN PARKINSON, who said that it was now realised that this condition was of much more than pathological interest, since many patients might recover. A typical attack occurred in a man of 45 or more who was usually seized, while resting or engaged in normal exertion, with rapidly developing pain in the chest. The pain almost always included the region of the sternum and became intense in a very few minutes, extending into the arms, as often the right as the left, and sometimes into the neck and back. This dull, heavy pain lasted for hours, even up to three days, and its effects were shown by collapse or shock. The patient, although pale, cyanosed, and sweating, perhaps vomiting, might want to move about. The possibility of sudden death was present throughout. The pulse remained regular and might be slowed; the temperature fell during the attack and rose in the succeeding days. The blood pressure was low and might be below 100 systolic. A number of cases had a pericardial rub, but this usually appeared on the third or fourth day, too late to help in diagnosis. A marked leucocytosis succeeded the attack. The complications were sudden death, embolism (10 per cent.), and the ordinary congestive type of heart failure in some degree. It was thus clearly differ-

entiated from angina, which came on during exertion, immobilised the patient, lasted a few minutes only, and in which there was no shock, no dyspnœa, rarely vomiting, no alteration in pulse, temperature, blood pressure, or heart sounds.

As time went on, the speaker hoped, we should be able to establish the diagnosis in less typical and convincing cases. Variants on the type were: the patient who developed a rapidly-increasing series of anginal attacks; the patient who for two or three weeks had repeated and terrible attacks of pain lasting longer than typical angina; and the patient who manifested cardiac failure of the ordinary type with dyspnœa, but without much pain. Arterio-sclerosis was the underlying condition; cardiac infarction was not often related to syphilis nor most common in patients with high blood pressure; 50 per cent. of sufferers had had previous angina. In most there was no thickening of the superficial arteries, but arterio-sclerosis was suggested by a loud aortic second sound when syphilis and high blood pressure had been excluded. The largest artery of the body could now be inspected directly by X ray and the smallest by the ophthalmoscope. In cases of coronary thrombosis the aorta showed radiographically a prominent dense knuckle near the clavicle and a wide shadow. (These appearances were illustrated by slides.) Part of the mystery surrounding angina pectoris had been solved now that it was realised that, in a large proportion of cases, cardiac infarction played an important part as complication or cause. Sufferers from angina might develop it after a cardiac infarct or have a sudden exacerbation due to infarction, and might be better or worse after it. The essence of management was moral support and morphine. Amyl nitrite was valueless and to be avoided. The speaker had an impression that some of his patients had improved under digitalis, but it was important to avoid any abnormal rhythm, such as this drug might originate. Long rest was essential; the condition should be looked upon as an illness comparable to typhoid.

Pathology and Electrocardiographic Diagnosis.

Dr. D. EVAN BEDFORD said that he had collected, from records of the past five years, 83 post-mortem cases of cardiac infarction, usually due to coronary thrombosis. Coronary atheroma underlay 80 per cent., syphilis 10 per cent., and coronary embolism 5 per cent. Syphilitic aortitis occluded the coronary orifices, but never affected the front of the arteries. Embolism was usually a complication of infective endocarditis or intra-auricular thrombosis. There was often gross coronary atheroma when the aorta was healthy, and atheroma undoubtedly had a predilection for the coronary arteries, producing stenosis of their lumen. Thrombosis occurred at this narrow part, or at an ulcer, or else through rupture of the intima and the formation of a small dissecting aneurysm. The left artery was affected twice as often as the right, and the site of election was the first two or three centimetres of the left anterior descending branch. Ninety per cent. of the cases were males; this might be due to some sex difference in cholesterol metabolism, as the feeding of animals on cholesterol produced atheroma. Dr. Bedford showed slides illustrating the area of myocardium involved and the microscopical appearances. The complications were pericarditis, intraventricular thrombosis, rupture of the heart, aneurysm and hæmorrhage into the myocardium and pericardium. Old infarcts were a common pathological finding, showing that many patients survived. Many who died died because they would walk about within a week or two of the infarction; the fall of blood pressure was a natural safeguard against rupture and must be maintained. He had known cases diagnosed as hysteria because the pain lasted too long for ordinary angina. Various cardiovascular conditions might be confused with infarction, and the differential diagnosis from acute abdominal conditions was very difficult. The guiding points were the dyspnœa, the tachycardia, the radiation of pain to arm and jaw, and the history. Dr. Bedford then showed slides illustrating the electrocardiographic changes during and after an attack. In the acute stage there was deviation from the iso-electric level of the segment between the R wave and the T wave; often this went up in lead 1 and down in lead 3. The small ventricular waves were notched or splintered. The deviation of the RT segment was very characteristic. In the healing stage the T wave was inverted either in lead 1 or in lead 3, but not in both. It was usually flattened or inverted in lead 2.

Dr. CAREY COOMBS asked whether the condition was becoming more common, or merely more commonly recognised. Knowledge of it was most valuable in determining the site in many cases of cardiac pain. The distribution of pain in infarction was the same as that of mild angina, suggesting that the latter had its origin in the cardiac wall itself. Eighty per cent. of his cases of infarction fell into a "senile arterio-sclerotic" group, when hyperpiesis and chronic infections such as syphilis had been excluded. Seventy per cent. of his cases of anginal pain came into the same group. On the other hand, this syndrome was absent from cases of cardiac syphilis, and embolism was rare as a cause of infarction. He had frequently found infarction in association with arterial obstruction elsewhere; once with senile gangrene and four times with intermittent limp. Occasionally there was a definite familial incidence. Considering all these facts, he thought it would be agreed that the background of the condition was senile degeneration of the arterial tree, perhaps with special reference to the coronary vessels. He thought infection might act as a precipitating factor. The combination of pericarditis (which occurred in 17 out of his 40 cases), fever, and leucocytosis would be accepted as evidence of infection under any other circumstances. Seven of his cases had suffered from recent acute infections—e.g., pneumonia, facial erysipelas, and bacilluria.

Infarction due to Premature Senility.

Dr. G. HADFIELD said he had repeated Gross's experiments and confirmed his findings by injecting a radio-opaque mass into the heart post mortem. After the fourth decade a very definite change took place in the vascular supply of the heart which, from consisting of straight, fairly large trunks arranged in an orderly system of branches, became crowded with very many minute, closely and irregularly packed vessels, branching very unequally and tending to become tortuous. He showed skiagrams comparing the heart of a man of 75 or 80 years of age with that of a patient after a cardiac infarction, and remarked on the striking similarity. He suggested that in a case of ischæmic necrosis in a man of 55 we were dealing with a heart whose coronary circulation had reached a stage of senility not normally reached until 85. This type of circulation was precarious, especially if associated with a left-sided hypertrophy and in the presence of acute infection, which acted by lowering the blood pressure. Animal experiments had shown that to get the largest area of infarction it was always necessary to lower the blood pressure artificially. Three almost consecutive cases of infarction under his care had had pneumonia, diphtheria with pericarditis, and acute bronchitis respectively.

Dr. J. A. RYLE recorded the outstanding features of the 14 cases that had come to his notice in the last two years, 12 of them during the past 12 months. Age had ranged from 46 to 90; eight had been men and six women. All had been private patients, for, like angina, cardiac infarction was rare in hospital practice. Most of them had been energetic individuals; the series included a doctor, a general, a judge, a hospital sister, a district nurse, and three active business men. Six had had previous anginal attacks and four more previous evidence of cardiovascular disease. Two had been suspected of acute gall-bladder disease, owing to epigastric tenderness under the right rib and a slight subicteric tint which was not uncommon a few days after the attack. Three had vomited; 11 had had pyrexia and five a friction rub.

Equalisation and faintness of the cardiac sounds was an important sign; all had had low blood pressure, except one in whom the reading had gone up from 120 to 190. The pulmonary signs of cardiac failure had been very patchy. Interesting subjective symptoms had been worrying pain over the fourth cervical area, similar to that associated with diaphragmatic pleurisy, and a severe neuralgia in the back of the neck and occiput (four cases) which might be very persistent. Finally Dr. Ryle pointed out that John Hunter's first anginal attack, 20 years before his death, had undoubtedly been one of cardiac infarction.

Dr. B. T. PARSONS-SMITH agreed that signs and symptoms were unmistakable, and might be summed up as a status anginosus with coexisting cardiac and circulatory failure. In one type of case the infectious process matured insidiously and the myocardium accommodated itself; in another cardiac infarction followed acute coronary arteritis. In a third type coronary occlusion was an episode in a process of circulatory inefficiency and aggravated pre-existing symptoms. With these exceptions the cause of infarction was atheroma of the coronary vessels, and the disease ran a relentless course. In most cases belonging to the angina group death depended on the complication of cardiac infarction. Tachycardia served as a menace to the mechanical efficiency of the peripheral circulation and embarrassed the already prejudiced coronary supply. The rhythm might be altered, for instance, premature contractions might occur, or bradycardia or heart-block. Electrocardiographic evidence should be sought early, or important details might be missed. Anastomosis was normally free in the coronary circulation and increased with advancing years, but might perhaps be absent in some cases. On this might depend the prognosis of a case of infarction.

Dr. E. STOLKIND said that the diagnosis was still very difficult and was very important in order to differentiate cardiac infarction from true angina, now that sympathectomy was practised for the latter. He gave an account of an investigation he had made into the subject, and said he had traced 62 cases in the literature up to 1915.

Dr. PARKES WEBER pointed out that in infarction the acute pain might disappear in every part for short intervals; this differentiated it from the pain of any abdominal condition. He thought that Dr. Hadfield's analogy with senility was far-fetched, but the condition was exactly what was found in thromboangeitis obliterans of the legs.

Dr. T. J. HOSKIN agreed that amyl nitrite was detrimental and might produce vomiting. He did not think the electrocardiogram would ever be normal after a cardiac infarction; the area infarcted was bound to show somehow. In addition to rest and morphia, oxygen was useful where there was cardiac failure, and he had had some success with venesection. Most of his cases had been in male Jews.

Dr. T. W. DAVIDSON showed a specimen in which an old infarct had become calcified. It was the heart of a lunatic who had been 25 years in an asylum; he had led an active life and shown no symptoms before suddenly falling dead.

Dr. WEBER urged a search for bone in the calcified wall of the ventricle of this specimen. In his experience the protective calcification always went on to the formation of true bone.

Dr. PARKINSON, in reply to Dr. Carey Coombs's question, said that, if the duration of life were increasing, arteriosclerosis would be increasing, and so cardiac infarction would become more and more important. The patient who had a tachycardia of 100 or more without pain two or three weeks after infarction was one to watch. The tachycardia might be the herald of further complications. He did not agree that, in the present state of knowledge, a normal electrocardiogram could not be found after infarction.

LIVERPOOL MEDICAL INSTITUTION.

AT a meeting of this Institution held on Jan. 14th, Dr. J. C. M. GIVEN, the President, being in the chair, Dr. A. DINGWALL FORDYCE read a paper on the

Detection and Care of Rheumatism in Childhood.

Detection of the frank classical type of acute rheumatism, he said, is simple, but active rheumatism —of danger to the heart—is often present in children with the existence only of symptoms which are not at all striking. The fundamental inclination towards infection is a diathetic peculiarity which may be determined before or after birth, and which may lead ultimately to the exhibition of rheumatic symptoms as a result of endogenous infection by (probably) varying organisms of a similar group. Our main aim must be to prevent the development of such a constitutional tendency as will lead to a favourable field for bacterial infection. During the year 1927, 213 cases of rheumatism were dealt with in the out-patient department and in the wards of the Children's Hospital. One child died of rheumatic heart disease. In 71 cases the heart was permanently damaged without doubt when the child was first seen, and at the end of the year 97 children disclosed permanently damaged hearts. In 31 cases the condition of the heart was doubtful, and in 84 cases there was no cardiac affection. Rheumatic nodules were noticed in three cases. The intelligence quotient, taken during the quiescent or convalescent stage, was usually well above 80, the deficiency being mainly scholastic. The essence of correct care was physical and mental supervision for a prolonged period. For the poorer classes six months in a country hospital with school, such as that at Heswall, proved very valuable, after the initial condition had been dealt with in the city hospital, but to procure effective results a further prolonged period in a residential school was often essential.

Mr. FRANK JEANS read a note on

Statistics with Some Observations.

Certain observations, he said, were more valuable than statistics, e.g., one of Mr. F. J. Paul's, that a woman of 75 was not as old as a man of 75 from the point of view of a major operation. There was a statistical effect on an operator's morality, which showed itself in the rejection or inclusion of certain cases, subconsciously of course, which might affect his mortality. He thought that if an appendicitis was treated medically and the patient died because it was really an internal strangulation, it should figure as a death from appendicitis treated medically; and a death from pneumonia treated by operation in mistake for appendicitis should figure as a death from appendicitis treated surgically, because the patient was, if not statistically, actually dead. One point was of enormous importance. Now that a great deal of surgery was being done by practitioner-surgeons, it must be obvious that pure surgeons were getting an increasingly high percentage of difficult cases, and, therefore, if their mortality was as high as it was 15 years ago, this was no cause for depression. The practitioner-surgeon, who often admitted that he only did the easy cases, was more selective than the pure surgeon was allowed to be; comparison between the two classes of mortality was therefore impossible.

COVENTRY HOSPITAL SATURDAY FUND.—In the past year this fund raised a total of £29,000, which creates a "record," the previous year's figure having been £22,625. Of this total £11,000 was the produce of a carnival. Since the establishment of the fund in 1874 it has raised £256,000.

DUNDEE INFIRMARY.—The trustees of the late Sir James Duncan, of Kinnettles, have made a grant of £30,000 to this hospital. Of this sum, £24,750 is to be expended upon the erection and equipment of a dispensary; the remainder is to be devoted to the endowment of five beds.

Reviews and Notices of Books.

INTERNAL SECRETION.

The Comparative Physiology of Internal Secretion. By LANCELOT T. HOGBEN, M.A. Cantab., D.Sc. Lond., Professor of Zoology in the University of Cape Town. London: Cambridge University Press. 1927. Pp. 148. 10*s.* 6*d.*

THIS third volume of the new series of monographs dealing with comparative physiology, published by the Cambridge University Press, has been compiled by Prof. Hogben, who is an active experimenter, with critical judgment. In this monograph he has obviously been at pains to include only experimental results of proved value. The result is an excellent essay of moderate dimensions, which should be of much use to physiologists. Starting with a chapter on chemical coördination, where the author discusses the precise sense in which he considers the term internal secretion should be employed, he passes on to the question of adrenalin and neuro-muscular coördination. In Chapter III. the relationship of internal secretion to chromatic function is fully dealt with. Prof. Hogben points out that perhaps the most conclusive evidence of internal secretion in the field of comparative physiology is seen in the control of colour response in amphibia. The rôle of the pituitary secretion in influencing the degree of expansion or contraction of the melanophores can be demonstrated by injection and ablation experiments. The pituitary injected frog is a dark adapted frog, whilst, on the other hand, injections of adrenalin induce a contraction of the melanophores. The part played by endocrine factors in regulating secretory processes in the body is described in Chapter IV. This includes a discussion of the regulation of the digestive processes, and also of a hypothesis recently put forward by Dixon and Marshall to account for the phenomena attending the termination of pseudo-pregnancy in the mammal, when, it is suggested, an ovarian-pituitary mechanism comes into play. There are also chapters on the relation of internal secretion to vasomotor regulation and endocrine factors in metabolism, the latter being discussed under three headings: the relation of the thyroid to basal metabolism, the relation of the pancreas to carbohydrate metabolism, and the functional significance of the parathyroid glands. In the last chapter the rôle of the ductless glands in developmental processes is dealt with. There is a very good account of the progress which has been made in relation to thyroid function in this connexion, and also of the experiments carried out to demonstrate the part played by the pituitary in the timing mechanism in amphibian metamorphosis.

RHEUMATISM AND GOUT.

Aspects of Rheumatism and Gout. Their Nature, Prevention, and Control. By LLEWELYN JONES LLEWELLYN, M.B. Lond., Consulting Physician, National Hospital for Rheumatic Diseases, Bath. London: William Heinemann (Medical Books), Ltd. 1927. Pp. 295. 10*s.*

Dr. Llewellyn, in this, his latest contribution to the study of rheumatism and gout, reveals a wide knowledge of the publications of others on the subject, whether these are based on speculation or genuine research. His own theories are in many respects unconventional. His opening chapters deal with diathesis and describe clearly the varying degrees of importance which have been given to it at different times as a factor in ætiology. He then develops the theory of "autonomic-endocrine-imbalance," and throughout the book it is clear that Dr. Llewellyn considers infection of subsidiary importance to glandular deficiencies. In his opinion endocrine disturbance is the cause of the vasomotor instability which Pemberton and his co-workers believe to play a leading rôle in the pathogeny of both atrophic and infective arthritis. One interesting chapter on the pre-rheumatic state in childhood deserves to be widely read. It gives an unmistakable clinical picture which is unfamiliar to many practitioners; if they learn to recognise it as typical, Dr. Llewellyn holds that in many cases disastrous consequences may be avoided. He emphasises the urgent need for preventive treatment, and complains that at present nearly all medical effort is applied to preventing the recurrence rather than the onset of the disease. The chapters dealing with pitfalls in diagnosis are perhaps the best in the book. Here the author is writing from personal and very wide experience as a spa physician, and these pages are full of sage advice.

The period of indiscriminate extraction for supposed dental origin of rheumatic disease is happily passing, but the final chapter on oral sepsis in relation to arthritis contains sound teaching. Even those whose views on rheumatic disease differ widely from those set out by Dr. Llewellyn will gain by studying the fruits of his ripe experience.

EPIDEMIC ENCEPHALITIS (ENCEPHALO-MYELITIS).

By LEO M. CRAFTS, B.L., M.D. Harv., formerly Dean and Professor of Nervous and Mental Diseases, Medical Department of Hamline University, Minneapolis, Minn. Boston: Richard G. Badger. 1927. Illustrated. Pp. 237.

THIS book is mainly a record of cases of epidemic encephalitis which Dr. Crafts has met with in his practice. About half the volume is devoted to case-reports; these would have made more interesting reading if they had been grouped under descriptive headings. Based mainly on these cases the author has written an account of the disease. This may be useful to the American student and general practitioner desirous of obtaining general knowledge on the subject, but it will not convey much new information to the practising neurologist. The proof-reading has been carelessly done. "Naso-phatyngeal" for "naso-pharyngeal," and "Trumbull" for "Turnbull" are illustrative examples; while the sentence on p. 65, "But will soon show the emergence of some of the above making a congerie at once clearing to the diagnosis," seems a departure from the "direct and ordinary English" in which, the author tells us in the preface, it has been his purpose to present his material.

CLINICAL CASE-TAKING.

By GEORGE R. HERRMANN, M.D., Ph.D., Assistant Professor of Medicine, Tulane University, New Orleans. London: Henry Kimpton. 1927. Pp. 90. 6*s.* 6*d.*

THE sudden change from the cold precision of the laboratory to the more haphazard methods of the bedside is often liable to offer opportunities for slackness to the unenterprising or tired student. He finds supervision relaxed, investigation less exact, and the whole field of medicine seems so vast that he succumbs to the temptation to take things easily. To combat this attitude a good guide to case-taking which endeavours to present a "case" with somewhat of the exactness of a scientific experiment is valuable. The business of the clinical clerk is to obtain and set down diagnostic data, and here he will find the necessary methods presented in an intelligible form. First the administrative data, so essential to an institution, then the story of the present illness, working back to the social history and the history of previous complaints, all are set out clearly. The physical examination is next developed in detail, laboratory examinations are indicated, and in the supplement are placed notes on diagnosis, abbreviated histories, abstracts, and progress notes. Dr. Herrmann's book is intended to supplement the "Methods in Medicine," the manual of the medical service of George Dock, and while all allowances are made for the special application of this book to the work at Tulane University, it certainly makes a larger, if not an international, appeal.

MAX VON PETTENKOFER.

His Theory of the Ætiology of Cholera, Typhoid Fever, and other Intestinal Diseases.. By E. E. HUME, M.D. New York: Paul B. Hoeber. 1927. With two portraits and six other plates. Pp. 142. $1.50.

Pettenkofer (1818–1901) got his start in life by being appointed professor of medical chemistry in the University of Munich at a salary of £60 a year with two measures of wheat and seven measures of rye. After a career of the greatest distinction in all branches of hygiene, he shot himself on Feb. 10th, 1901. Dr. Hume deals particularly with his views on the causation of cholera and typhoid fever. Pettenkofer held that the immediate cause of cholera was an *x* which he at once identified with the cholera vibrio when, years later, that was discovered by Koch in 1883. But he would have nothing to do with the idea that cholera could be caught by one person from another. He held that the comma bacillus had become innocuous when it was passed in the stools and could regain its virulence only by developing for a time in foul soil which was neither too wet nor too dry. Hence his famous association between a fall in the ground water and an epidemic, to which his statistical friends attached a probability of 36,000 to 1. Now that hygienists are beginning to think once more that there is something more than the bacillus in an epidemic, the tale may well be read again and pondered over. Dr. Hume tells it pleasantly enough, though some curious mistakes (p. 6 "Marsch," p. 20 "pyroxalic acid," and p. 22 "zinc content of the air") make one a little doubtful whether he is altogether reliable on technical details. There is an ample bibliography of 285 items by and about Pettenkofer.

INTRODUCTION TO PHYSIOLOGICAL CHEMISTRY.

By MEYER BODANSKY, Ph.D., Associate Professor of Physiological Chemistry, University of Texas. London: Chapman and Hall, Ltd.; New York: John Wiley and Sons, Inc. 1927. Pp. 440. 20*s*.

IN this book of moderate size Dr. Bodansky undertakes the difficult task of writing for students starting the subject, and also for those who wish to obtain information in specialised branches. On the whole he has succeeded well, and one good point is that this volume is one of the few elementary text-books giving an adequate series of references. The ground covered is very much the same as that of most other text-books on biochemistry. The first chapter or introduction is devoted to a very brief consideration of physical chemistry which could have been considerably extended with great advantage to the elementary reader. A more detailed description of the hydrogen electrode, for example, than that which appears on p. 19, together with a simple diagram would have been of great assistance to the student. The account of Donnan's membrane equilibrium theory is so condensed as to be difficult to follow.

A series of chapters on carbohydrates, fats, and proteins comes next. One novel feature in the section on proteins is a concise account of the views of the late Dr. Jacques Loeb. We believe that this is the first time that his work on the stoichio metric combining powers of proteins with acids, &c., has ever been explained in an elementary text-book. The chapter dealing with enzymes is rather nebulous and does not give any practical methods of estimating the activity of these substances. In the section on hæmoglobin the author has taken great care to incorporate the views of the most recent workers, such as J. Barcroft, M. L. Anson, and A. E. Mirsky, but he has rather neglected the work of the earlier investigators. For instance, some of the more stable derivatives of hæmoglobin, such as hæmatin, are by no means adequately described. An interesting section on physiological oxidations and a series of four chapters dealing with metabolism follow and the rest of the ground is adequately covered.

This volume will be of the greatest value to students of biochemistry, both as an elementary text-book and as a work of reference.

JOURNALS.

JOURNAL OF PATHOLOGY AND BACTERIOLOGY. Vol. XXXI. No. 1. Pp. 1–139. January, 1928.—Histamine and Leucocyte Emigration, by R. T. Grant and J. E. Wood (London). It seems very probable on general grounds that the phenomena of inflammation are caused by some product of injured tissues; histamine is known to cause dilatation of the small blood-vessels and increased permeability of their walls, but, as the authors show, it is not responsible for the emigration of leucocytes.—A Keratitogenous Virus of Pulmonary Origin, by J. R. Perdrau (London). A virus causing keratitis, but not encephalitis, in rabbits is found in a considerable proportion of human pneumonic lungs.—The Histology of Post-vaccinal Encephalitis, by J. R. Perdrau (London).—Variations in the Leucocyte Count upon Single and Repeated Injection of Quartz and of Indian Ink Particles, by A. R. Elvidge (Montreal). Such injections cause a leucopenia, followed by a leucocytosis; a second injection during the leucocytosis does not produce a leucopenia and this reaction is not specfic.—Proliferation of Endothelium on the Liver in Experimental Venous Stagnation, by C. Bolton and W. G. Barnard (London). In venous obstruction produced by partial occlusion of the inferior vena cava above the diaphragm the endothelium on the surface of the liver proliferates into buttons, knobs, and polyps without anything which may be called an inflammation.—The Distribution of Tuberculous Lesions in Man and Other Primates with an account of the Lymphatic Glands and Vessels of the Thorax and Upper Abdomen, by H. H. Scott and J. Beattie (London); annotated on p. 198.—The Determination of the Rate of Antibody (Precipitin) Production in Rabbits' Blood by the Method of Optimal Proportions, by H. R. Dean and R. A. Webb (Cambridge). The course of the reaction can be followed well by finding the mixture of antigen and antibody which flocculates most rapidly.—The Cells of Peritoneal Exudates in Guinea-pigs, by L. J. Witts (Cambridge). Working with intravitam and supravital staining the author finds that silver nitrate brings out the cells in the order endothelium, neutrophiles, lymphocytes, eosinophiles, macrophages. These last are of the clasmatocyte type, into which monocytes probably change on leaving the blood stream.—A Modification of McIntosh and Fildes' Anaerobic Jar, by G. S. Wilson (London). An engineers' pattern which costs 12 guineas.—Adenomata of Pancreatic Islet Tissue in the Pylorus and Duodenum, by M. J. Stewart and S. J. Hartfall (Leeds). Heterotopic pancreas is not uncommon, but nodules composed of islet tissue do not seem to have been recorded before.—The Stability of Schick Toxin, by A. T. Glenny, C. G. Pope, and H. Waddington (Beckenham). A borax + boric acid + sodium chloride mixture preserves diluted Schick toxin quite satisfactorily.—A Strain of *B. diphtheriæ* showing Unusual Virulence for Guinea-pigs, by W. Mair (London). A uniquely virulent strain which could not be completely neutralised in vivo with any quantity of antitoxin; death could be prevented, but suppurative lesions still occurred.—Difficulties in the Agglutination of Hæmolytic Streptococci, by F. W. Andrewes (London). Two sorts of colonies must be recognised; the smooth glossy ones give only group agglutination; for specific results the rougher matt colonies must be used.—The Treatment of Relapses in Experimental Trypanosome Infections, by C. H. Browning and R. Gulbransen (Glasgow). After repeated relapses cure may be ultimately obtained with the same trypanocidal drug and without increasing the dose.—Obituary notices of J. W. Dawson and Adrian Stokes.—Proceedings of the Society.—Books received.

THE LANCET.

LONDON: SATURDAY, JANUARY 28, 1928.

THE DIETETIC VALUE OF MILK AND MILK PRODUCTS.

THE exceptionally high dietetic value of milk for the human dietary has been emphasised lately by the work of Dr. CORRY MANN and of Dr. W. CRAMER. The preliminary report by Dr. J. B. ORR on a large scale test carried out on school-children in seven cities and towns in Scotland and in Belfast, which we publish in this number, adds further confirmatory evidence. There is nothing surprising or revolutionary in the idea that milk is a most useful food for the growing child. The vitamin content is not, of course, the only factor that confers upon milk and milk products their dietetic value, which was recognised before the discovery of vitamins; and our new knowledge of the existence of these food accessory factors has justified a common belief. The earlier writers on dietetics, however, thought merely in terms of quantity. An adequate diet in their view was one which provided for an adequate intake of protein and of total calories. The study of the chemistry of proteins which revealed these substances as being built up of amino-acids has made it clear that all proteins are not dietetically equivalent. Broadly speaking, the body requires for its well-being to be supplied in the food with all the amino-acids of which its cells are built up; a protein which contains all these amino-acids is therefore of a higher dietetic value than one in which some essential amino-acids are missing. Gelatin is an example of a protein of very low dietetic value, since many essential amino-acids are missing in its make-up; it is therefore impossible to live on a diet in which the protein is supplied entirely in the form of gelatin, and such a diet has to be supplemented by the addition of proteins of a very high dietetic value. The proteins of milk—casein and lactalbumin—or of meat are examples of proteins of a high dietetic value, since they contain all the essential amino-acids. In an intermediate position are the proteins of bread which are completely deficient in only one essential amino-acid (lysin) and partially deficient in another (tryptophane). The mineral constituents are another important factor in the consideration of a diet, especially where the growing organism is concerned. The growing child has a special requirement for calcium and phosphates for the building up of bone. Recent work in rickets has shown that these inorganic elements must be supplied in the diet not only in adequate amounts but also in definite proportions. Most articles of food are poor in calcium; milk is especially rich in calcium and contains calcium and phosphates in the proper proportion. A pint of cow's milk contains one gramme of calcium, more, in fact, than is contained in a pint of lime-water. VOIT has calculated the calcium requirement of the growing child as one-third of a gramme per day; such a requirement would be covered by the consumption of 7 oz. of cow's milk. If it had to be covered by the consumption of bread or of eggs it would require 1000 grammes of bread or 15 eggs. Such a diet is unsuitable for bone growth because, apart from any other consideration, it furnishes the required calcium with a large excess of phosphates, which would be harmful. Milk is also relatively rich in vitamin A, which is associated with the fat and is therefore absent, or greatly diminished in amount, in separated milk. It also contains a considerable amount of vitamin B. It does not contain vitamin C.

If we compare the dietetic value of milk with that of another staple article of diet—bread—we find that, as already stated, the proteins of bread are not of the same high dietetic value as those of milk. Moreover, bread is poor in calcium and contains this element with a large excess of phosphates, while so far as vitamins are concerned, white bread contains neither A, C, nor, as appears now to be generally agreed, B. The dietetic value of bread lies in the fact that it presents the bulk of the chemical energy required in a form which is cheap, palatable, and not readily perishable. We may say that bread stands for quantity, milk stands for quality. What is true for milk applies also to its products, cheese and butter. Cheese contains the protein casein, of a high dietetic value, in a very concentrated form, together with a certain amount of vitamin B. Butter is rich in vitamin A. Both contain less calcium than milk but are still richer in calcium than most other articles of diet. As the calcium requirements for growth become less urgent so the diet changes from milk to cheese and butter. It is now readily seen why milk and its products are of such high dietetic value. Their addition to a diet corrects most dietetic deficiencies except a deficiency of vitamin C which can be supplied by fresh fruit and vegetables. A diet therefore which is built around a basis of bread or cereals and milk or its products is economically and dietetically sound. The point has been very neatly put by no less an authority than GRAHAM LUSK who, in deploring the general ignorance concerning the elementary facts of dietetics says: "Few of those who eat in restaurants realise that the greater quota of nourishment which is brought to them lies not in the specific dish served but in the bread and butter which is ostensibly presented as a gift." That cereals and milk or its products represent the basis of our diet has, of course, been the experience of mankind, and if, to-day, the question of a sound dietary has become a problem for serious consideration, it is because the consumption of milk and its products has fallen into disuse, partly for economic reasons, partly through ignorance, and partly as the result of the teaching of faddists who take a one-sided view of dietetic problems. The remarkable improvements obtained in children both by Dr. CORRY MANN and by Dr. ORR by the addition of milk to their diet, is evidence not only of the high dietetic value of milk but also of the inadequacy of the diet on which the children had been kept. From this point of view the investigation of Dr. ORR is of special value because it applies to children who live in their homes. The result is a striking commentary on the glib statement which one hears and reads so frequently that on the whole the dietary of the people in this country is adequate.

It is also clear from these considerations that even separated milk is of high dietetic value especially to growing children if the child is kept on an inadequate diet. For the addition of separated milk will compensate for an inadequate supply of calcium, for a deficiency of vitamin B, and for the presence of proteins

of low dietetic value in the basal diet. But it would be a serious mistake to argue that separated milk is as good as full milk, unless butter happens to be given in the diet. There is abundant evidence in the literature, beginning with the well-known paper by Dr. C. E. BLOCH, of Copenhagen,[1] to show that the absence of milk-fat in the diet leads to serious impairments of health—not only in children but also in adults. There is also the evidence of Dr. CORRY MANN'S investigation, where the group of children receiving butter did nearly as well as the group receiving full milk. If this difference has not yet appeared in Dr. ORR'S investigation it is due to the fact that the ill-effects resulting from a deficiency of milk-fat take a much longer time to appear and that they are not so readily reflected in the height and weight of the children, which form, after all, a superficial criterion of the general state. It is known from experiments that animals can grow to their natural size on a diet deficient in vitamin A, but are nevertheless inferior to a normal healthy animal in their general vigour and in their greater susceptibility to infections, especially of the respiratory tract. H. C. SHERMAN has, in fact, recorded this effect in an experiment in which separated milk was used.[2] The further reports of Dr. ORR'S investigation, which is being carried out under the authority of the Scottish Board of Health, will be awaited with the keenest interest. The importance of this investigation as well as that of Dr. CORRY MANN cannot be overestimated. The Medical Research Council, which was responsible for Dr. CORRY MANN'S study, and the Scottish Board of Health have rendered an important service to the community in having supported work which could not have been initiated satisfactorily by a private individual; we should like to see a more extended investigation covering the whole period of childhood and carried out in institutions. Sir GEORGE NEWMAN, in his recent report On the State of the Public Health, writes: "When it is realised that little more than a quarter of a pint is the average daily consumption of milk in this country at the present time, some conception can be formed of the inadequacy of the amount of this most valuable food which its children are receiving, and of the improvement in their growth and vigour which might certainly be secured by an adequate increase in its consumption. . . ." Dr. CRAMER, in drawing the same conclusion, has shown that not only the consumption but also the supply of milk is inadequate. The dairying industry complains that, under the present conditions of an inadequate demand, it cannot dispose of all the milk it produces, and that for its salvation as an industry it requires an increased demand. Is this really a problem the solution of which surpasses the wit of man?

NOMENCLATURE.

HUMAN thought is always a little in advance of human language, and since Adam's time man has continually been engaged on finding names for things as he slowly disentangled them from one another. And with that innate passion for security and certainty which he has had for at least as long, man has gone on defining and naming in the glorious hope that finality is to be found with the other ingredients of the golden age just round the next corner. Such a faith is altogether admirable in that it makes for clear thinking and clear writing in the descriptions of our discoveries. But in its eschatological form it is, of course, wholly illusory; a complete and immutable system of names and definitions presupposes a state of completion of human knowledge which means an end of progress so repugnant that no lively mind can contemplate its possibility.

Nomenclature then is not a question of absolute truth. Some people think it is; they take it too seriously and fall into the trap of giving definitive names, true to-day, false to-morrow. But it is a matter of practical importance, and no doubt, as Dr. E. WARD suggested in our columns last week, most doctors do not take it nearly seriously enough. In medicine obscurities and difficulties of names and definitions seem to arise, roughly speaking, in three ways—from realising that two things which were thought to be the same are really different, from finding that apparently dissimilar things are really alike, and from general ignorance of the nature of the thing. The old controversy about the cause of "sunstroke" was solved by the discovery that excess of actinic rays causes "sunstroke" and a hot moist atmosphere causes "heatstroke"; "sunstroke" is still used as including heatstroke, and there is a real gain in giving up the term and talking of "insolation" instead. Similarly the difficulties about "shock" have largely disappeared since it was realised that immediate shock, of the nature of a severe faint and due to overstimulation of the central nervous system, is quite different from secondary shock, mainly an anhydræmia and caused by the absorption of histamine-like bodies from injured tissue. Examples of misleading differentiation are mostly pathological, and it is perhaps mainly from the point of view of the elementary student of general pathology that it is confusing to call what is essentially the same thing "pus" "caseous material" and "gummatous stuff" under different circumstances, or to speak of an "infarct" in the spleen and "softening" in the brain. The discovery of the tubercle bacillus revealed an underlying similarity in a great diversity.

It is to examples of these two classes of confusion that, we believe, it would not be difficult to apply effective and useful consideration, possibly by such deliberate means as an ad hoc committee. But it is another matter to deal in the same way with confused mobs like "rheumatism" or "eczema" in which only a few small groups have shown any signs of standing together on a basis of substantial identity. The useful definition of a disease may be ætiological—e.g., typhoid fever—or anatomical—e.g., cirrhosis of liver—or purely symptomatic—e.g., epilepsy: all such criteria are, in the final sense, provisional, but they do very well in practice. But when nothing is known about the cause, little about the morbid anatomy and the symptoms are various, it is difficult to see how much progress can be made with names and definitions. Yet the attempt is, we believe, worth making: if anyone is going to define "constipation" he will have to acquaint himself first with all that is known or suspected about it, and he would be a fuller man even if, as is likely, the profession declined to adopt the definition he finally reached. And an inquiry into the meaning of "rheumatism" will in one way or another repay all the work which can be put into it. But it would be unwise to expect too much from such a committee as Dr. WARD proposed in our correspondence columns; arbitrary definitions based on grossly inadequate knowledge would be worse than useless and names can be invented usefully only when there is something definite to identify. Patient inquiry will solve many of the present puzzles. There is a famous picture of Adam standing affectionately

[1] Journal of Hygiene, 1921, xix., 283.
[2] Sherman and Smith: The Vitamins, 1922, p. 197.

among the horse, cow, cat, and dog, and so on, for which he had easily found names, and looking a little doubtfully at an unfamiliar crowd of elephants and crocodiles and the like waiting for their titles; they got them in the end.

A NEW CHAIR OF PUBLIC HEALTH.

THE establishment by the University of London of a chair of public health, tenable at the London School of Hygiene and Tropical Medicine, is both generally an excellent departure and in special relation to the School is of real import. Only recently we had to chronicle at the School the institution of new departments of bacteriology and immunology under Prof. W. W. C. TOPLEY, and of epidemiology and vital statistics under Prof. M. GREENWOOD. When these things are recalled in connexion with the facilities for clinical and pathological study offered by the Seamen's Hospital Society we see that the students of the School have open before them opportunities which it would be difficult to over-estimate for carrying on the development of public health work in this country and overseas. Thus it is of prime importance to secure the right man for the chair. The governing body of the School have adopted a provisional scheme to come into force upon the new appointment, under which the broad practice of preventive medicine, the appropriate technique of sanitation, and the principles of official administration will receive parallel attention, so that the control of disease, both infectious and non-infectious, can be exemplified by practical measures, by scientific hygiene, and by much needed instruction in the way to secure full coöperation between health authorities and medical practitioners.

The applications of candidates for the new chair must be received by the Academic Registrar, University of London, South Kensington, S.W. 7, not later than the first post on Feb. 16th, a date that is near at hand; and it is understood that the elected man, though his appointment may not take effect until the beginning of 1929, will be asked immediately to take a seat on the School Council, and to assist in the organisation and equipment of his own special work. While the general supervision of the Director of the School, Dr. ANDREW BALFOUR, will remain, and while matters of broad policy and finance will be outside the professorial duties, the man appointed will bear a heavy responsibility which is not directly represented in a salary of £1500 per annum—in saying which we do not forget certain compensations which he will obtain. The work is of the highest importance both practical and academic, and the professor will have unequalled opportunities for public service, for the scope of his influence will be Imperial, and, indeed, international.

INTERNATIONAL CONGRESS OF OTO-LARYNGOLOGY. As we have already announced, this congress is to be held at Copenhagen from July 30th to August 1st. Among the subjects to be considered is the Anatomical Structure of the Ear and its Influence on the Course of Suppuration of the Middle Ear, on which a discussion will be introduced by Prof. Georges Portmann (Bordeaux) and Prof. J. Mouret (Montpellier). Messrs. Bennett, 66, Haymarket, London, S.W. 1, have been appointed by the Danish Committee to arrange excursions, and will shortly send out particulars to all who have joined the British Committee. The hon. secretaries of this committee are Mr. J. S. Fraser (Edinburgh), and Mr. F. W. Watkyn-Thomas and Mr. Lionel Colledge (London), to whom inquiries should be addressed. Dr. H. V. T. Borries, 10, Christian IX.'s Gade, Copenhagen K., is in charge of the arrangements for the anatomo-pathological museum and Dr. F. Norsk, 3, Nytorv, Copenhagen K., is arranging an exhibition of instruments. They invite contributions and applications should be made as soon as possible.

Annotations.

"Ne quid nimis."

OUR PRISON POPULATION.

THE Prison Commissioners' Report in former years has contained an Appendix of extracts from the annual reports of Governors, Chaplains, and Medical Officers. The extracts were frequently illuminating, and it is a pity that the Commissioners' Report for 1926, just issued,[1] omits it. There is, however, as usual, plenty of interest in the Medical Commissioner's contribution to the Report. The old difficulty of dealing with mentally defective prisoners under the Act of 1913, which arose from the statutory insistence upon knowledge of the defective's early history, has been partially removed by the amending Act passed at the end of last year. But it is clear that, although the administration of our insanity and mental deficiency statutes enables us to eliminate from the prison population large numbers of persons unsuitable for prison discipline, there is still much to be done. There remains a residue of non-certifiable cases which medical opinion must regard as improperly placed in a prison environment. This subnormal group includes the simple feeble-minded and the border-line prisoner "whose offences are due to their low intelligence and high suggestibility and who are relatively incapable of social rehabilitation on account of their low mentality." The group is defined to include mental defectives of congenital origin with or without epilepsy, persons in an imperfectly developed state of insanity, those who are senile or mentally weak after an attack of insanity, the weak-minded whose condition is due to alcoholic excess, and those whose condition cannot be attributed to any definite cause. Arrangements have been made for reporting these cases and, if the term of detention is a month or more, transferring them to special prisons where they can be segregated and suitably employed under modified discipline. It is, of course, unfortunate that their detention cannot be continued beyond the term of their sentence, but, on their discharge from prison, they are brought to the notice of the local agent for the Central Association of Mental Welfare. If the nation had regard to the economy and the mental improvement which might follow if a more permanent segregation could be authorised by Parliament, it is hard to believe that the law would not be speedily changed. These are cases which are unemployable in the conditions of life outside an institution, though there is a capacity for some simple manual employment under supervision. The Medical Commissioner gives particulars of 77 men and 29 women of this type. The commonest offence among the men was theft or receiving; amongst the women it was drunk and disorderly behaviour; the other offences vary greatly in gravity. One of the men had 54 previous convictions; one of the women had 109.

Two years ago (in the Report for 1924) the Medical Commissioner referred to the treatment of prisoners' teeth. He mentions this point again now in connexion with inmates of Borstal institutions; he is able to record that special arrangements have been made not only for the care of teeth but also for the correction of errors of vision and the cure of deformities or other conditions which prevent the Borstal boy or girl from receiving full benefit from training and which hamper their prospects of employment afterwards. There were five suicides in local prisons in England in 1926; this is not serious in view of the marked increase in suicide recorded in the criminal statistics for 1925 as occurring since the later stages of the war. Perhaps the most important topic in the Medical Commissioner's observations is the prevalence and effect of encephalitis lethargica. The disease has been studied over the two-year period from April, 1925, to the end of

[1] Cmd. 3003. H.M. Stationery Office. 9d.

March, 1927. No case of its onset in any prison or Borstal institution occurred, but 72 cases (65 males and 7 females) were noted amongst remand and convicted prisoners. Half of these cases were classified as "definite," the disease being established either from known early history or from typical subsequent condition. The remaining cases were classified (in almost equal proportion) as "probable"—i.e., where the history is indefinite but the mental and physical condition leave little room for doubt—and "suspected" where the existence of the disease is distinctly suggested. In only 53 out of the 72 cases did the attack of encephalitis occur before the age of 18; thus only two-thirds would have come within the new definition of "mental defectiveness" in Section 1, Subs. (2) of the 1913 Act as recently substituted by the amending Act of 1927. In 54 out of the 72 cases imprisonment either had no harmful effect or actually produced an improvement; the residue included one person insane on admission, another reported to the court as insane and cases which either deteriorated or got no benefit from prison life. The Medical Commissioner is careful to point out that, while the disease is serious and can at times have serious sequelæ, the after-effects are of all degrees of intensity; it cannot, he thinks, be logically contended that a person who has had encephalitis is thereafter necessarily immune from the consequences of his criminal acts.

THE WELLCOME RESEARCH LABORATORIES, KHARTOUM.

As soon as Lord Kitchener had reconquered the Sudan in 1898 he established the Gordon College as a boarding-school where secondary education could be given to picked native boys and other boys of African and Eastern race to equip them to take part in the political administration and the education of the country. Inevitably the College became the headquarters of education all through the Sudan, and gathered under its roof, besides its own departments, a number of kindred and indispensable organisations of which the best known to our readers is the Wellcome Tropical Research Laboratories. The year 1926, according to Major R. G. Archibald's report, incorporated in the Report and Accounts of the Gordon Memorial College Fund for that year, was the busiest since the foundation of the laboratories, as closer coöperation with the Government enabled a greater number of examinations to be carried out. The bacteriological section is to be removed shortly to new buildings near the Civil Hospital and the new Kitchener School of Medicine, where its usefulness will be still further extended. Among its activities in the year under review were 7510 routine examinations. One day in the week is set aside for syphilis tests, of which Kahn's precipitation test is still the most popular. An epidemic of enteric fever in the neighbouring city of Omdurman threw much extra work on the staff, who, in addition to examining a quantity of material, manufactured prophylactic and therapeutic vaccines on a large scale. Doses of cholera vaccine sufficient for 12,000 individuals were prepared for the protection of Sudanese Muslims making the pilgrimage to the Hejaz, all of whom are now inoculated. A serious outbreak of rabies in the southern provinces necessitated the preparation of 2000 doses of antirabic vaccine; the virus was sent down from the Antirabic Institute in Cairo and maintained by passage through rabbits. Work has been done on the investigation of the sources of well pollution throughout the country, a most important activity in a land where wells are the only supply for the bulk of the population. Another piece of research is that directed against bilharzia, and in this the staff are assisted by a brigade of intelligent natives who have been trained to locate and destroy the mollusc which acts as the intermediate host. The examination of several hundred cultures of soil bacteria has established that black arm disease of the cotton plant does not originate in the soil. The training of native laboratory assistants for hospitals in outstations is one of the latest additions to the activities of the centre. As well as carrying out their arduous duties, the staff have contributed six papers between them to various scientific journals.

The chemical section has for the last few years been chiefly engaged in soil and fertiliser investigations, in connexion with the rapid cotton-growing development on the Blue Nile. Other questions that have been referred to the section from time to time have been the Government contracts for sugar and petrol, the analysis of alcoholic liquors at the high local temperature, and the standardisation of the liquid rotl (pound). The Atbara laboratory busies itself with railway problems, such as the examination of water and fuel, the cause of priming in boilers, the prevention of scale, and the proofing of rolling-stock against fire. The staff of the section found time to publish four papers during 1926.

The entomological section have no lack of pests on which to make war, and some of their enemies at present are cotton-destroying termites, thrips, bollworm, and locust. The interesting fact has been established that the gregarious locust so destructive to crops is evolved by suitable climatic conditions from the solitary and sedentary *Schistocerca flaviventris*, and this discovery should prove of considerable economic importance. The Director recommends arsenite of soda as a preservative of timber against white ants. In addition to these sections, geological and antiquities sections flourish, and there is a natural history museum. Sub-laboratories have been established for some time at Atbara and in the rich irrigated belt of the Gezira. The future of the Sudan, which promises to be so prosperous and so important for the cotton industry of this country, will probably owe as much to the energy and initiative of this scientific foundation as it will to any department of the Government, which is fortunate to have the coöperation of so admirable a service.

THE APPARENT INCREASE OF CANCER.

WHATEVER may be its explanation, there has been an apparent increase of cancer during the last decade or two, and the general public is beginning to take alarm about it. In another column Dr. D. F. Shearer marshals his figures to show that the reported increase of death is only apparent, and that when proper allowance has been made for the effect of better diagnosis and more accurate certification there is nothing left which cannot be explained by a change in the age-distribution of the population. It is open to anyone to check his calculations, for his figures are taken from the annual reports of the Registrar-General, although he does not appear to be familiar with Dr. T. H. C. Stevenson's analysis in the 1924 report. Individual study of these figures is, of course, very laborious, and Dr. Shearer has limited himself to a comparison between two isolated years 1913 and 1925; very probably he would be the first to admit that a better idea of the general trend of the death-rate would be given by taking a continuous series of years, or by comparing two periods of five years or more, especially in the case of relatively uncommon sites. This has been done by Dr. Stevenson first for the series of years 1897–1911 (R.-G.'s annual report for 1917) and more recently (R.-G.'s statistical review for 1924) for the two decades 1901–10 and 1911–20; with these are compared the single year 1924, which is only one year less recent than the year chosen by Dr. Shearer, and the general result of taking 1924 and 1925 is the same. Dr. Shearer seems to think that Dr. Stevenson's conclusions were based for the most part on crude death rates, but although two tables in the latter's earlier analysis did employ crude death-rates at sites (for reasons explained) his general conclusions were confirmed by standardised values; and in the later report all the tables are based either on standardised rates or on rates at age-groups. When Dr. Shearer writes "the error that may arise from the use of

crude rates is well shown in the case of the tongue in the male. Using crude rates, cancer of the tongue rose between 1913 and 1925 from 56 to 63 per million living, standardisation shows that in fact cancer of the tongue had fallen from 70 to 63 per million living "—he is doing Dr. Stevenson an injustice, for in his 1924 report (Table XXXIX., p. 58) the latter gives the following standardised death-rates per million at all ages for cancer of the tongue—

1901–10.	*1911–20.*	*1924.*
43	51	48

which show the recent tendency to decrease that Dr. Shearer points out. The absolute differences in the rates quoted by Dr. Stevenson and Dr. Shearer are due to different standard age-distributions adopted in standardisation, but this does not affect the agreement in the general trend. With regard to Dr. Stevenson's grouping of the sites into "accessible" and "inaccessible" Dr. Shearer calls this a distinction "of opinion and not of statistical fact." The classification was based on reports of 52,420 cancer deaths in the U.S.A. in 1914, the practitioners being asked in each case if the diagnosis were certain or uncertain, and the classification was determined by the proportion of uncertain diagnoses in each site. In the accessible group the highest proportion of uncertain diagnoses was 0·6 per cent., while for inaccessible they ranged from 5·3 per cent. to 72 per cent. As the whole point of the division was facility of diagnosis, the method appears to us statistically sound. In any case each site is a separate question, and a true decrease in females of cancer of the uterus cannot be set against an apparent increase in males in some other site. While probably there is no disputing the fact that a large part of the increase in cancer deaths is due partly to change in age composition of the population and partly to better diagnosis, it is questionable whether this accounts for all the increase or only part of it. The effect of age can be estimated statistically by taking rates at ages or by standardisation, but the effect of change of diagnosis can only be tested indirectly and must to some extent be a matter of opinion.

THE DENTISTS REGISTER AND THE NON-PAYMENT OF RETENTION FEES.

THE dental profession has suffered much from the uncertain expression of Acts of Parliament. First of all in 1910 there was trouble over Section 3 of the Dentists Act of 1878, the House of Lords interpreting the words "specially qualified to practise dentistry" in such a way that it was necessary to pass the Act of 1921 in order to overrule the decision in Bellerby *v.* Heyworth. Then in 1924 the case of Binns *v.* The Dental Board showed that the words "served during the late war" in the 1923 Act were capable of a far wider construction than had been supposed. And now it has been necessary to bring a test action in the Court of Chancery to obtain judicial confirmation of the fact that the Acts and Regulations authorise the Dental Board to remove a dentist's name from the register if he has failed to pay his annual retention fee. To uninstructed minds the matter may have appeared simple, but it was stated in court that the Law Officers in England took one view and the Lord Advocate in Scotland took the other; the Dental Board was therefore obliged to go to the law-courts for a definite ruling. The Act of 1921 says that the Board may make regulations about a variety of matters, including "prescribing the fee, not exceeding £5, to be charged in respect of the retention on the register of any person registered after the commencement of this Act in any year subsequent to the year in which that person was first registered." Regulations were accordingly made providing that the annual retention fee should be paid before Dec. 31st, and that in default of payment the registrar should forthwith remove the name from the register. If the Act had merely said that the Board might charge fees and might recover them in the law-courts, it might not have been clear whether the non-payment of a retention fee would justify removal of a name from the register, or would merely give a right of action against the defaulter. But when the Act speaks of a fee "to be charged in respect of the retention on the register of any person registered" it seems obvious to the lay mind that non-payment of fee involves non-retention of name. This is the view which Mr. Justice Astbury took. It had been stated on the other side that the Act of 1878 made a fee payable on registration only and contained no power to remove a name for non-payment of fees. The Acts of 1878 and 1921, it was argued, had to be read together, and there was nothing in the 1921 Act which expressly authorised the strong step of removal from the register —excluding a practitioner from his livelihood—for non-payment of fees. If the authority to remove the name for non-payment were to be found only in the Regulations made under the Acts and not in the Acts themselves, then (the argument continued) the Regulations must be ultra vires. This ingenious argument, however, did not succeed. The Astbury judgment decides that the Regulations are perfectly valid and that the power to charge a fee in respect of the retention of a name on the register means just what the ordinary man would suppose it to mean. It would indeed be surprising if the Dental Board's Regulations were found at fault when the machinery for making them is so elaborate. First the Board makes the Regulations, then it submits them to the General Medical Council for approval. If approved (with or without modifications) they are next submitted for the approval of the Privy Council; indeed they have no effect until the Privy Council agrees to them. Finally the twice approved Regulations are laid before Parliament and during the next 21 days either House may present to His Majesty an address praying for the annulment of any Regulation so laid; if such an address is presented, the Regulation may be annulled by Order in Council and is thenceforth void. It is hard to see what greater check upon the legislation of the Dental Board could be devised.

THE HELMINTHIC PARASITES AND THEIR HOSTS.

IN commemoration of Prof. Bernhard Nocht's seventieth birthday about a hundred students and friends interested in tropical medicine have combined in contributing short articles, on subjects which they have made specially their own, to an imposing and sumptuously illustrated volume [1] comprising over 600 pages and issued by the University of Hamburg. The papers cover a large field, of which one rather neglected corner may be explored—the bearing on practical medicine of the inter-reaction of host and helminthic parasite.

As an index of helminthic infection the general eosinophilic reaction, shown by the percentage of eosinophile leucocytes in the cutaneous circulation, is well known. It is perhaps less appreciated, although the fact was established for hookworm over twenty years ago by Ashford, King, and Igaravidez, that eosinophilia frequently fails in individual cases, often where infections are heaviest. A paper by Hung dealing in mass with persons infected with ankylostomes, ascaris, and trichuris, shows as usual that the average eosinophilia is high. One by Schilling deals with a case in which a dead *Tænia solium* coexisted with an eosinophilia of 50 per cent., and another in which, with a ruptured hydatid cyst, there was no eosinophilia at the critical time, but as the result of the host's reaction to flooding of the peritoneal cavity with the cyst's contents an eosinophilia of 50 per cent. was present three weeks later, when it was of no diagnostic value. Local eosinophilic reaction round a worm is

[1] Hamburgsche Universität. Abhandlungen aus dem Gebiet der Auslandskunde, Band xxvi.; Reihe D, Medizin und Veterinärmedizin, Band ii. Arbeiten über Tropenkrankheiten und deren Grenzgebiete. Bernhard Nocht, zu seinem 70 Geburtstag gewidmet von Freunden und Schülern.

among the subjects dealt with by Hoeppli in a paper which mentions work that he has published elsewhere. Such a reaction may be the only evidence in the tissues that a wandering worm has passed that way; or, with necrosis and fibrosis added, it may serve to illustrate the toxic damage inflicted by parasite on host and the host's efforts to neutralise this damage and imprison the intruder. These local reactions, it is pointed out, are easier to understand than, for example, the apparently complete tolerance by the human body of that energetic wanderer, *Loa loa*. It may be, however, that in onchocerciasis we have a clue to this mystery. In redescribing the histology of the marked giant-celled fibrosis which this nematode produces, Hoeppli's paper will emphasise for the reader the mental association between onchocerciasis and subcutaneous nodules which N. A. Dyce Sharp began to break. The latter has shown that in Nigeria the microfilariæ are found, not essentially in the circulation, but in the lymph from the excoriated back, and that only in 30 to 40 per cent. of persons showing microfilariæ can nodules be detected even with the most thorough examination. Either, then, the species in Nigeria is not *O. volvulus*, although no difference has yet been detected, or nodules are present, but lie deep and impalpable; or onchocerca may, like loa, run free in the body, not always producing an imprisoning reaction. It is perhaps impossible to explain the predominant localisation of microfilariæ in the skin of the back on the supposition of deep nodules, and indeed Dyce Sharp's recent report [2] of the escape of a female *O. volvulus* from the granulating stump of a foot, and apparently not from a nodule, lends force to the last of the three suggestions.

Fülleborn supplies an illuminating note on a deliberate massive infection of his own skin with mature larvæ of *Uncinaria stenocephala* of the dog; an itching, weeping, œdematous area formed from which "creeping eruptions" spread. Complete serial sections of excised skin showed that the tracks were caused by nematode larvæ, corresponding in size to those deliberately introduced, and lying in tunnels filled with fluid and leucocytes burrowed out of the epidermis itself, immediately under the stratum granulosum. Fülleborn is inclined to attribute this position to an oxygen-taxis, but it seems even more likely that only by getting as far away as possible from the healthy lymph of man could this immature parasite of the dog survive in the unnatural host. It seems, too, more reasonable to attribute the marked inflammatory reaction which was present to bacterial infection than to the cervical glands of the larvæ with their estimated weight of 0·000 005 mg. At all events the investigation shows, as did that of Kirby Smith [3] that creeping eruption may be caused by a larval strongyle, so confirming Looss's personal clinical experiences; and in diagnosis this possibility must be added to that of a wandering gnathostoma or gastrophilus. It seems, then, that a creeping eruption is evidence of the restlessness of a parasite in the unnatural and unsuitable medium formed by the epidermis of a non-optimal host, a medium nevertheless not so abhorrent to it as the richly lymph-bathed tissues. It is just this tissue factor which seems to be at the bottom of observations reported by Yokogawa. He finds that the feeding of mature larvæ of the dog hookworm *Ancylostoma caninum* to a non-optimal host, such as the guinea-pig, leads to penetration by the larvæ of the wall of the alimentary canal, and their taking the well-known pulmonary-bronchial-œsophageal route to the stomach, with the added handicap of the liver—compared with larvæ who take the same route after penetrating the skin. If, however, they be fed to the host which they like best, the dog, they mostly develop directly in the intestine without further wandering. From their optimum habitat they make no restless efforts to escape; indeed a larger percentage reaches maturity than is the case after a skin infection. The probable bearing of this observation on human hookworm infection is clea but it remains evident that the opportunity of conta between skin and larvæ in fouled earth is likely to much more frequent than contact between muco and larvæ in fouled water taken to drink. Prophyla will, on the whole, remain unchanged.

[2] THE LANCET, 1927, ii., 1290.
[3] Trans. Roy. Soc. Trop. Med. and Hyg., 1926, xx., 6.

PERICARDIAL PAIN.

Dr. J. A. Capps has made an interesting contrib tion [1] to the vexed question of the rôle of pain pericarditis. It has long been recognised th patients suffering from pericarditis often complain pain, and it is equally common knowledge that pe carditis may, on the other hand, be curiously painle throughout its course. Dr. Capps has tried to fi some explanation by which these facts can be cor lated. In four patients with pericardial effusio paracentesis was performed and the inner surfac of the pericardium were explored with a silver wi No pain resulted; nor did scratching of the viscer pericardium produce it. He reports 12 cases, four subacute and chronic pericarditis with large effusion four of simple dry pericarditis, and four of corona thrombosis and dry pericarditis. In the first eig the pericarditis was not associated with pain, and the last four the continuous pain (anginal in typ due to the coronary thrombosis, was not in any w modified by the advent of the pericarditis. From the data he concludes that dry pericarditis is usually painless disease. The explanation of the undoubt pain noted in certain cases of pericarditis is to found in the involvement of the tissues outside t pericardium, more especially the pleura—an extensi of the inflammatory process not uncommon in t pericarditis which complicates rheumatism a pneumonia. Pleuro-pericarditis and antero-posteri mediastinitis are painful, especially a pleuro-pe carditis near the attachment of the pericardium the diaphragm, where the involvement of fibres the phrenic nerve causes pain in the neck. Dr. Cap seems to be justified in his conclusions that t pericardium itself is insensitive and that pericardit per se is painless. The occurrence of pains, of variab site and degree, is due to the involvement of contiguo tissues in the inflammatory process.

[1] Arch. of Intern. Med., 1927, xl., 715.

TUBERCULOSIS IN MONKEYS.

THE serious study of comparative pathology h hardly yet begun, and we are glad to see such goo use made of the opportunities afforded by the Garde of the Zoological Society as is shown in a paper b Dr. H. H. Scott, the Society's pathologist, and Dr. Beattie, lately their anatomist, which is published the current *Journal of Pathology and Bacteriolog* They describe first the anatomy of the lymphat glands and vessels in the thorax and upper abdome of the three anthropoids and a number of old-wor monkeys; the arrangement is essentially the sam in all of them and in man, and new-world monke differ only in having no main thoracic duct. Suc differences as occur are correlated with size, sing glands in small species being replaced by groups glands in larger animals. The details will be examine in the original by those interested; we take note the authors' insistence on the necessity of distinguis ing the mediastinal from the tracheo-bronchial glan which in human pathology are often confused. The then consider rather fully the anatomy of tuberculos in 65 cases in monkeys with special reference to a outbreak of the disease in the monkey house in 192 and compare the lesions with those found in childre in Hong-Kong by Dr. Scott. They find that the monke disease corresponds very closely with the children disease, and recognise the same two broad groups primary infection—respiratory and alimentary; th former is more rapidly fatal, causing death by gener dissemination and sometimes a secondary alimentar

nfection which is promoted perhaps by the fact that nonkeys and apes never spit. What is not repre-ented in the monkeys is the adult type of human uberculosis; there being presumably no tubercle acilli in their natural homes they never receive the mall immunising infections in infancy which so nuch modify the course of human tuberculosis in ater life.

THE VITAMIN ASSAY OF COD-LIVER OIL.

In our last issue (pp. 148–150) appeared a report escribing an extremely interesting attempt to valuate the vitamin A in cod-liver oil. The attempt as made at the instigation of the Second International onference (League of Nations) on the Biological tandardisation of Certain Remedies, and was rganised in this country by the Accessory Food actors Committee of the Medical Research Council nd of the Lister Institute. The object was to ompare the values obtained by a number of different aboratories for the same samples of cod-liver oil ubmitted to all of them. The tests were to be made y the biological method (growth of rats) and one aboratory was to make a colorimetric test, so that s result might be compared with those obtained by he biological method. Apart altogether from its esults the attempt itself marks an epoch, and reveals n a gratifying manner the machinery which we now ossess, whereby the desire of the League of Nations ould be imparted to a number of different labora-ories in this country and their ready coöperation ecured. A few years ago there was no means by hich such a test could be made save by the goodwill f an individual worker in an individual laboratory. ow, besides the machinery already referred to, there lso exists the possibility for a substance to be tested fficially for its vitamin value by submitting it to the itamin-testing department of the British Pharma-eutical Society; indeed, when this department has ad time to get under weigh the claim of any roprietary article to contain vitamins should not be ccepted unless substantiated by such a test. The mpire Marketing Board, too, has a research depart-ent devoted to the study of problems connected with he vitamin values of foodstuffs. Ten years ago the eed for these agencies was already strongly felt, but heir establishment seemed a very remote dream, and here is ground for satisfaction that in that short time hey have come so fully into existence.

As regards the actual results of the tests the findings f the different laboratories are in very tolerable agree-ent where a simple grading of the oils is concerned, ut it is pointed out that in order to assign actual uantitative values to the vitamin A content of the ifferent oils by the biological method, it would be ecessary to use far more experimental animals than as in this case possible, since the variation in the erformance of individual rats is very considerable. he colorimetric method gave results in agreement ith the results of the biological tests, but the report rges that before any conclusion is drawn as to its eneral validity, a comparison should be made of the sults given by it and by the biological method, in ne assay of vitamin A in substances other than od-liver oil, such as butter, palm oil, and cereal oil. he different cod-liver oils used were prepared by ifferent methods and had different histories The sts show that the shorter the history of the oil and ne less its exposure to the air the greater its potency vitamin A, even the factor of the oil being kept in full or a half-filled bottle seemed to make a marked ifference; the liability of vitamin A to destruction y oxidation is, of course, well known.

Following the report appeared a paper (pp. 150–152) y Miss J. L. Leigh Clare and Miss K. M. Soames, who ade the test described above for the Lister Institute, iving further details of their test and the results of heir examination of the same series of oils for itamin D. In testing for this vitamin they find the me wide range of behaviour in individual rats, as in sting for vitamin A, but they were able to grade the oils tested in the same rather rough way as was possible in testing for vitamin A, and to say definitely that whatever the original relationship, there was no fixed quantitative ratio between the amounts of vitamin A and of vitamin D in the oils at the time of testing. They point out that the chief medicinal value of cod-liver oil lies in its content of vitamin D and that to evaluate the vitamin A in a certain oil furnishes no evidence as to its content of vitamin D. They therefore criticise the biological method of testing cod-liver oil, laid down in the United States Pharmacopœia, which aims at the biological assay of vitamin A only.

Everyone who has worked with tests of this type knows how difficult it is to get clean-cut results, unless a vast number of animals is used, and the papers at present under consideration should also be useful in showing what degree of accuracy can be looked for and what degree it is quite useless to expect unless a large series of animals can be used.

THE TAVISTOCK CLINIC.

THE Tavistock Clinic has celebrated its seventh birthday by a general stocktaking, the results of which have just been published. In December, 1919, it was decided to open a psychotherapeutic clinic on an experimental basis of three years, with the understanding that it should be closed if and when hospitals could meet the need. Eight years later despite the establishment of psychotherapeutic clinics at hospitals, there is no talk of closing down, but rather of further expansion. Largely owing to the enthusiasm and wisdom of its honorary director, Dr. H. Crichton Miller, and the devoted services of its first honorary secretary, Mrs. Leith Ross, the Tavistock-square Clinic has come to stay. Since the first patient was received on Sept. 27th, 1920, 2545 cases have passed through it, and it has established a place deep in the hearts of very many of them. Between the Scylla of poverty and the Charybdis of institutionalism, the clinic steers a difficult course. On the latter it has certainly not foundered, for it has a peculiar personal touch which no hospital can well provide. The ideal of the consulting-room has been maintained, although, so greatly has the work outgrown its premises, psychotherapy must now be practised in an area and the children's department works in a basement kitchen. About one-third of the cost of treatment is contributed by the patients, although inability to pay anything is never a reason for refusing admittance. Many of the staff serve on an honorary basis, but workers are still handicapped by the necessity for bazaars, matinées, and other forms of begging inseparable from an inadequate revenue. The history of the furniture in use at the clinic would make a good story; the report asserts that, however it may have been obtained, it was rarely purchased and never stolen. Whether or not the £30,000 they desire would drive them on to Charybdis only the experiment would show; without doubt valuable research material is being wasted for lack of an adequate institute. The children's department deals with every kind of maladjusted child, and an interesting table shows the very high proportion of cases in which neurotic symptoms, other than those complained of, were revealed on investigation. The trained social worker plays an integral part in the treatment of the child patient, for she alone can provide the physician with these data of home and family which are essential pieces in the puzzle. An outstanding feature of work at the clinic has always been the breadth of the survey made of each patient. The case-paper presents the physician with a formidable array of questions covering every system of the patient's economy. The focal sepsis, the endocrine pattern, the stigma of degeneration, the faulty function of any organ or system—all these are taken into consideration before the purely psychogenic factors are allowed to dominate the picture. A laboratory was installed in 1926. A routine physical examination is followed by a labora-

tory overhaul, and, when necessary, by advice from suitable specialists on the honorary consulting staff. Every kind of psychotherapy is in use, but on the whole simple re-education and "autognosis" is most often used. The results are, in general, satisfactory. A questionaire was sent out last year to old patients, inquiring of their welfare. Five hundred replies were received; 44 per cent. recorded "much" benefit from treatment, 32 per cent. "some" benefit, and 22 per cent. little or none. The benefit had been maintained in 61·5 per cent. of the first group, increased in 30 per cent., and 80 per cent. remained fit for work; 17·7 per cent. of those who had received some benefit had improved since treatment. A good reference library for staff and students has now been accumulated. Not least of the activities of the clinic are the lecture courses, both for the public and for medical practitioners. The total attendance during the last seven years is estimated at 27,100, and the lectures are in many cases followed by seminars for more detailed study of the subject. Stress is laid on the practical and prophylactic side of the work. "In the post-war days," says the report, "the audiences were large and fashionable; now they are perhaps smaller, certainly less fashionable, but decidedly more intelligent. Intelligent teachers and thinking parents are recognising more and more that out of the experience of the consulting-room and the clinic there are lessons to be transmitted which have value in the upbringing of the most normal children. . . . Thinking people are recognising that much of our work is devoted to the abnormalities of those who were normal to start with and have been made abnormal by the treatment they have received, generally at the hands of their elders, and often from those who loved them most." We congratulate the Tavistock Clinic on the past and wish it every success in the future.

Dr. Aldo Castellani, Director of Tropical Medicine at the Ross Institute and Hospital for Tropical Diseases, Putney Heath, has been appointed an Honorary Knight Commander of the Order of St. Michael and St. George. Dr. Castellani received from the King of Spain a few weeks ago the Grand Cross of the Order of Civil Merit. He became C.M.G. in 1920, and also holds Italian and Serbian decorations granted in recognition of his outstanding services in the elucidation of tropical disease and as a bacteriologist.

INDEX TO "THE LANCET," VOL. II., 1927.

THE Index and Title-page to Vol. II., 1927, which was completed with the issue of Dec. 31st, is now ready. A copy will be sent gratis to subscribers on receipt of a post-card addressed to the Manager of THE LANCET, 1, Bedford-street, Strand, W.C. 2. Subscribers who have not already indicated their desire to receive Indexes regularly as published should do so now.

DONATIONS AND BEQUESTS.—Sir Arthur Everett Shipley, F.R.S., Master of Christ's College, Cambridge, besides other bequests, left £5500 to Christ's College for the endowment of a Fellowship.—During the past month the Royal Manchester Children's Hospital have received over £4000, including a gift of £1000 from Mr. A. W. Cowburn to endow a cot, and legacies of £500 each from Mrs. H. Heynssen and Miss Rosina Lipman.—The Rev. Henry Swann, of West Kensington and Boscombe, Bournemouth, vicar of St. Thomas's, Charterhouse, E.C., who left £113,432, made large charitable gifts, including £1000 to the British Home for Incurables, Streatham, and after other bequests the residue of his property, which amounts to over £20,000, to King Edward's Hospital Fund.—Inspector-General Henry Hadow, who lived at Southsea, left £10,000 stock to Epsom College for the creation of pensions for medical men and their widows, and £100 each to St. Peter's Hospital, Covent-garden, and the Portsmouth and Southern Eye and Ear Hospital, and after other bequests the residue of the property to the Royal Portsmouth Hospital to endow beds to be known as the Ellen Beatrice beds.

Modern Technique in Treatment

A Series of Special Articles, contributed by invitation on the Treatment of Medical and Surgical Conditions

CCLX.—TREATMENT OF MINOR DEGREES OF NASAL OBSTRUCTION.

II.*—NASAL POLYPI AND ETHMOIDAL DISEASE.

NASAL polypi cannot properly be considered except in relation to ethmoidal disease. The day has long passed when a nasal polypus was regarded as a benign new growth. Woakes first pointed out that the polypus was merely a symptom of underlying bony disease, and Lack later set our conception of this abnormality on a sound pathological basis. It is now almost universally conceded that the presence of nasal polypi and of ethmoidal inflammatory changes are intimately associated, a presumption which is strengthened by the fact that the more thoroughly the bone at the base of a polypus is removed, the less is the likelihood of the polypus recurring. It is then of the utmost importance that the practitioner should have some criterion as to the amount of associated bony disease present, and it may be taken that clinically the number and nature of the polypi give a valuable indication. The presence of merely one or two pedunculated polypi shows that the osteitis is localised or even arrested; but where numerous small polypi occur, especially if associated with unhealthy mucous membrane in the vicinity the bony affection is probably widespread and active. Thus by visual inspection of the nasal cavities the practitioner may glean much useful information as to the prognosis and the extent of the necessary operative treatment. A good skiagram is of the utmost value in determining the presence of an associated accessory sinus infection or the extent of the ethmoidal disease. In the case of a choanal polyp, the skiagram may show some involvement of the maxillary antrum, although paradoxically enough the antrum may on transillumination appear to be brighter on the affected side.

Incidence and Symptoms.

Polypi are most often met with during the third and fourth decades, and are stated to be very rare under the age of 10 years; but during the past year I have seen three cases in girls of 8 years and under, in which the polypi were removed with the snare, and shown by histological examination to be of the ordinary character. They vary greatly in size and number, but usually appear as greyish, gelatinous oyster-like masses, especially when they are of the pedunculated variety. If, however, they protrude into the vestibule, or into the naso-pharynx, they may be reddish in colour and simulate a papilloma. Almost invariably they originate from the ethmoidal region under cover of the middle turbinal, and this is an important factor in the correct diagnosis. The other point to be borne constantly in mind is that they are freely movable with a probe, and examination with the probe should therefore be the invariable rule. Observance of the above two points should prevent mistakes in connexion with hyperplastic growths; these are not thus freely movable and often spring from the inferior meatal region. Other conditions are less likely to be mistaken for polypi, but it must not be forgotten that a malignant growth of the ethmoid may be overlaid by polypi, so that the real condition only becomes evident after the latter have been removed. Frequent attacks of spontaneous epistaxis in the presence of polypi should arouse suspicion of malignant disease. The use of cocain plus the probe will serve to distinguish between true polypi and mere turgescence of the turbinals. The main symptoms are those of nasal obstruction, and patients often complain that such obstruction varies with the state of the barometer, being aggravated by cold or damp weather. Occasionally the sufferer states that he has something which flaps like a valve

* Part I., on Deflections of the Septum and Abnormalities of Turbinate Bones, appeared last week.

n the nose, or, as mentioned above, the polyp may ven present at the anterior naris. The obstruction is requently associated with a profuse nasal discharge f varying consistency. There is often a peculiar asal intonation of the voice, and in severe cases the asal bridge may be obviously distended. Aprosexia nd anosmia are not infrequent, whilst supra- or nfra-orbital neuralgia may be complained of. Hay ever and asthma are often aggravated, if not caused, y the presence of polypi, whilst a dry purposeless ough is frequently a part of the train of symptoms. A certain degree of deafness or giddiness is at times roduced, and some authorities state that polypi may e a cause of epilepsy.

Prognosis.

Prognosis is extremely difficult. If polypi are eft untreated, they tend to increase in size and umber, and may in time lead to marked impairment f the general health or even to serious complications. t is obvious that some form of operative interference s necessary, and that topical applications can have o curative effect where bony changes are present. A few prognostic points may however be formulated.

1. A single pedunculated polypus—especially if cystic n nature—does not tend to recur after local removal.

2. Polypi associated with obvious disease of an accessory inus are amenable to treatment if the patient is prepared to ace the appropriate operation.

3. Even though the patient refuse a radical operation e may be promised considerable relief of the obstructive ymptoms if he will permit of occasional removal of the olypi by means of the snare.

4. In the case of the choanal polypus, its removal is sually curative in effect, as the bony disease has almost nvariably been arrested by the time the polypus is discovered.

Treatment.

The treatment may be: (1) simple removal of the olypi by the snare; or (2) radical removal of the olypi and the underlying diseased bone.

In *simple removal* it is necessary to have: (*a*) good næsthesia; (*b*) good illumination; and (*c*) a good nare. Local anæsthesia suffices, and may be induced y the application of cotton-wool pledgets soaked in 0 per cent. cocaine solution (and well squeezed out) o the polypi and their attachments. Efficient lumination is an obvious necessity where the work as to be done in a confined space such as the nasal avity. The best snare is Glegg's, which has the dvantages mentioned in the previous article, and in hich the end of the barrel is crossed by a bar. This revents the wire from being drawn into the barrel, nd the polypus is thus torn away from its attachments nd not merely cut through at the level of the wire s by a sharp guillotine.

The wire noose is gently slipped round the lower end of he polypus and then with a slight side-to-side movement s insinuated under cover of the middle turbinal to reach he attachment of the growth. The noose is then tightened, nd the polypus sharply pulled away from its attachment. s a rule, the whole of the pedicle will come away, often ccompanied by a scale of the subjacent bone. In some ases when the polypi are growing from the anterior end f the middle turbinal, the latter may be removed with the olypi; such removal is beneficial as it diminishes the kelihood of recurrence. Should bleeding obscure the iew, it is well to press on the area with a mop of cotton-wool oaked in hydrogen peroxide, which for this purpose is a etter and safer styptic than adrenalin. If both sides of the ose are affected, we should endeavour to clear one side ompletely in order to restore nasal respiration, and defer reatment of the second side for a week or ten days. Rather risk hæmorrhage may follow, but can usually be controlled y applying compresses of iced water to the bridge of the ose; if it persist a little cotton-wool, soaked in hydrogen eroxide, may be temporarily packed into the nose. This hould be removed in ten minutes, when a loose pledget of ry wool may be inserted in the vestibule to prevent blood rickling over the lip. In no circumstances should the ose be tightly packed with gauze, lest severe sepsis super- ene. The immediate after-treatment consists in trickling few drops of hydrogen peroxide into the nostril at frequent ntervals for two to three days; later a mild nasal wash should e used several times daily for a week. Another important art of the after-treatment is the regular inspection of the ose for recurrence of growth and the immediate removal hereof. Recurrences should be dealt with promptly.

With patience and perseverence even bad cases of polypi can thus be cured, but if after several careful removals the condition persists, a more radical procedure must be adopted.

For the more *radical operations* the question of anæsthesia must first be considered. Local anæsthesia by cocainisation (with or without adrenalin) may suffice, especially if induced by Sluder's method, where a pledget of wool dipped in a saturated solution of cocaine is pushed up under the posterior end of the middle turbinal whilst a similar one is pushed up into the antero-superior part of the nose, both being left in situ for ten minutes. In this way the branches from the spheno-palatine ganglion and the nasal branches of the ophthalmic division are dealt with, and excellent anæsthesia results. In many cases, however, it is preferable to induce general anæsthesia after packing the nasal cavities with wool soaked in 10 per cent. cocaine. If general anæsthesia be employed, it is important to remember that the use of adrenalin to stop hæmorrhage during the operation may be fraught with danger. As far as possible the polypi are first removed with a snare or Luc's forceps, and the subjacent diseased bone is then cut away by Luc's or Grunwald's forceps, or by Meyer's ring knife. It is of the utmost importance to avoid injury to the cribriform plate, and these manipulations should therefore be performed below the level of attachment of the middle turbinal, and the ring knife must be drawn from behind forwards and slightly downwards. Any attempt to cauterise the base of the polypus is at once useless and dangerous.

The after-treatment is as before—instillation of hydrogen peroxide drops will almost invariably arrest the hæmorrhage, and no attempt to pack the nose tightly is justifiable, save as a last resort.

Naturally, if associated accessory sinus disease be present, it must be dealt with by suitable operation. Kisch has lately reported an external operation for the treatment of ethmoidal affections, but at present its execution should be confined to those who are accustomed to perform extensive intranasal operations.

Difficulties which may Confront the Operator.

In a small percentage of cases the removal of polypi seems to cause a violent reaction in the ethmoidal region, and when next seen the patient has produced a copious crop of œdematous polypi. In such, it is well to hold one's hand and wait for the congestion to subside ere removing these fresh polypi. If this be done, a much longer period of immunity from recurrence will follow the second operation. In the treatment of the choanal polypus, a general anæsthetic is desirable, when a finger may be passed into the naso-pharynx to facilitate adjustment of the loop of the snare. Here, again, Glegg's snare will be found most convenient, for a large loop may first be passed over the polypus and then easily adjusted so that it will grip the pedicle firmly. In some cases it may be found necessary to introduce a pair of curved forceps into the naso-pharynx, grasp the pedicle therewith, and tear it from its attachment.

The major difficulties encountered, however, are due to spurs and deviations of the septum. Such obstructions may not be recognised until the anterior polypi have been removed, and it is in these circumstances that efficient illumination and cocainisation are of the utmost value. If the hæmorrhage be profuse and obscure the view, it is better to have the strength of mind to desist for the time being, and to postpone the completion of the operation for 10 to 14 days. Manipulation in the dark will lead only to incomplete removal of the polypi and the causation of troublesome adhesions. In cases of marked septal deflection it may be necessary, or at least advisable, to perform a submucous resection before dealing with the polypi.

Finally, it should be borne in mind that children tolerate cocaine badly, and strong solutions therefore should on no account be used for them.

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Special Articles.

MILK CONSUMPTION AND THE GROWTH OF SCHOOL-CHILDREN.

Preliminary Report on Tests to the Scottish Board of Health,

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DURING the past few years a number of tests have been carried out in America [1 2 3] to determine the nutritive value of milk for children. More recently a test under exact conditions in a labour colony for boys, where the whole diet was controlled, was carried out by Dr. Corry Mann [4] for the Medical Research Council. The results of all these tests which are in general agreement have demonstrated the high nutritive value of milk for growth.

In 1926–27 a large-scale test was carried out in schools in seven cities and towns in Scotland and in Belfast to determine whether the results obtained by Corry Mann under the rather special conditions of an institutional school would be obtained in children attending elementary schools and receiving the varied and changing diet of the ordinary working-class household.

The tests were conducted under the auspices of a committee appointed by the Board of Health for Scotland with Sir Leslie Mackenzie as chairman. The committee consisted of the school medical officers for the cities and towns where the work was carried out. The collection of data was undertaken by four women medical officers. The clinical examination of the children was made by the late Dr. L. D. Cruickshank, of the Scottish Board of Health, and the school medical officers.

A repeat test is at present being undertaken under the supervision of Dr. Gerald Leighton, Scottish Board of Health, and a full report will be issued when the new test is completed.

The results obtained to date, however, so strongly confirm those of Corry Mann and previous workers which are of such importance in public health that it has been thought advisable to issue the present interim report.

Method.

At each centre four groups of children were taken, each from 40 to 50, according to the size of the classes in the school. One group received whole milk, a second separated milk, and a third a biscuit of the same energy-yielding value as the separated milk. The fourth group, which acted as control, received no supplementary feeding. The test began at the end of November and finished at the end of June. The Belfast test did not begin till the end of January; it is, therefore, not included in the results of the seven month experiment.

At Peterhead and Greenock the children were between 5 and 6 years of age, at Dundee and Edinburgh between 8 and 9 years, and at Aberdeen and Paisley between 13 and 14 years. Glasgow and Belfast had a series of groups of each of the three ages. There were thus under test children at the beginning, the middle, and the end of school life. The 5- to 6-year-old children received three-quarters of a pint of milk per school day, the 8 to 9 one pint, and the 13 to 14 one and a quarter pints. The milk was given at school.

Owing to unforeseen difficulties the tests in Glasgow had to be rearranged about three months after they had been begun, and the whole-milk group was dropped. The Glasgow data, therefore, are limited to the control, biscuit, and separated milk groups.

Weights and Heights.

It was intended to weigh the children with only one layer of underclothing. This was found to be impracticable. The children were therefore weighe in indoor clothing, without shoes, and there a considerable fluctuations in the weight figures, ev those taken on successive days. The average weig of clothing was ascertained month by month and t necessary addition or deduction made in the fin weight figure. Owing to these circumstances t records of individual weights are not so reliable indication of the influence of milk as the figur showing the increase in height.

The weights were recorded to the nearest quart pound. The heights were recorded to the neare quarter inch, the children being measured witho shoes. The measurements were taken on thr consecutive days at the beginning and end of t test and at intervals of about one month during i progress.

Before the results were calculated such cards we rejected as showed absence due to serious illnes about 25 per cent. of missed feeds, doubtful increas in weight or height, &c. This accounts for t decreased number of children available for the fin analysis.

The *average* increase in height and weight has be worked out per group at each age and in each centr giving the results shown in Table I.

TABLE I.—*Average Increase in Height (Inches).*

Age.	—	Controls.	Biscuits.	Sep. Milk.	Whol Milk
5–6	Peterhead ..	1·425	1·392	1·568	1·550
	Greenock ..	1·470	1·455	1·625	1·543
	Glasgow ..	1·267	1·101	1·500	—
8–9	Edinburgh ..	1·224	1·286	1·457	1·483
	Dundee ..	0·972	0·931	1·209	1·105
	Glasgow ..	1·125	1·089	1·297	—
13–14	Aberdeen ..	1·395	1·263	1·602	1·622
	Paisley ..	0·889	0·841	1·292	1·365
	Glasgow ..	1·146	1·265	1·734	—

TABLE II.—*Average Increase in Weight (lb.).*

5–6	Peterhead ..	1·773	1·973	2·983	2·741
	Greenock ..	1·595	1·200	1·969	1·994
	Glasgow ..	2·784	2·234	2·407	—
8–9	Edinburgh ..	2·132	2·972	3·238	3·330
	Dundee ..	2·433	2·404	2·659	2·556
	Glasgow ..	2·292	2·266	3·471	—
13–14	Aberdeen ..	5·212	4·939	4·790	5·837
	Paisley ..	3·986	3·934	5·242	4·821
	Glasgow ..	3·855	4·809	5·959	—

The height increases when all the groups at o age, irrespective of locality, are combined, show ve strikingly the influence of the milk supplement aiding growth, and the failure of the biscuit supp ment. Table III. gives the mean increase (in inch in each group at each age, with the probable erro

At every age the increase in height of the who milk or the separated-milk groups is significant greater than that of the biscuit or control grou while the difference in increase in height between t two milk groups is insignificant. The supplementa biscuit, on the other hand, fails to exercise a significant stimulus in the 8-year-old group, a in the 13- and 5-year-old groups has an almo significantly retarding effect.

As the milk groups (whether separated or who showed a distinct improvement in growth over t non-milk—i.e., biscuit and control—groups, t figures of the *average* increase at all ages were arrang into two groups, with the results shown in Table I

This seven months' experiment thus shows average monthly increase of 0·17 in. and 0·42 lb. the non-milk groups, and of 0·21 in. and 0·52 lb. the milk groups. In the much lengthier experime by Corry Mann the corresponding figures we 0·15 in. and 0·32 lb. for all boys on the basal di and 0·22 in. and 0·58 lb. for all boys receiving t supplement of one pint of pasteurised milk eve day, the milk group increases in height in bo

TABLE III.—*Mean Increase (Inches) in Each Group at Each Age, with the Probable Error.*

Age 13.

Group I.	Group II.	Mean I.	Mean II.	M. I.–M. II.	P.E.	Remarks.
Biscuits.	Controls.	1·1279	1·2175	−0·0896	±0·0401	Biscuits almost sig. worse.
Whole milk.	,,	1·5122	1·2175	+0·2947	±0·0469	Whole milk sig. better.
Sep. ,,	,,	1·5524	1·2175	+0·3349	±0·0417	Sep. milk sig. better.
,, ,,	Biscuits.	1·5524	1·1279	+0·4245	±0·0444	,, ,,
Whole ,,	,,	1·5122	1·1279	+0·3843	±0·0493	Whole milk sig. better.
,, ,,	Sep. milk.	1·5122	1·5524	−0·0402	±0·0507	No sig. difference.

Age 8.

Biscuits.	Controls.	1·1160	1·1000	+0·0160	±0·0278	No sig. difference.
Whole milk.	,,	1·3233	1·1000	+0·2233	±0·0318	Whole milk sig. better.
Sep. ,,	,,	1·3355	1·1000	+0·2355	±0·0254	Sep. milk sig. better.
,, ,,	Biscuits.	1·3355	1·1160	+0·2195	±0·0281	,, ,,
Whole ,,	,,	1·3233	1·1160	+0·2073	±0·0340	Whole milk sig. better.
,, ,,	Sep. milk.	1·3233	1·3355	−0·0122	±0·0321	No sig. difference.

Age 5.

Biscuits.	Controls.	1·3443	1·4026	−0·0583	±0·0291	Biscuits almost sig. worse.
Whole milk.	,,	1·5458	1·4026	+0·1432	±0·0298	Whole milk sig. better.
Sep. ,,	,,	1·5697	1·4026	+0·1671	±0·0295	Sep. milk sig. better.
,, ,,	Biscuits.	1·5697	1·3443	+0·2254	±0·0303	,, ,,
Whole ,,	,,	1·5458	1·3443	+0·2015	±0·0305	Whole milk sig. better.
,, ,,	Sep. milk.	1·5458	1·5697	−0·0239	±0·0309	No sig. difference.

Sig. = significant and significantly.

xperiments, thus approximating very closely in ›ite of the Scotch children receiving the supplement nly five days per week.

The children in the different groups at the various entres were examined at the end of the experiment nd clinical observations made. Independent reports ere also handed in by the headmasters of the schools. hese clinical reports, which cannot be expressed in gures, show that at most of the centres the children ho had received milk appeared to be in better ondition than those receiving no milk. It was oted that, on the whole, they had glossier hair and

TABLE IV.

—	Milk groups.		Non-milk groups.	
	Average increase—		Average increase—	
	in height.	in weight.	in height.	in weight.
ll ages ..	inches. 1·470	lb. 3·617	inches. 1·212	lb. 2·974

learer complexions and held themselves more erect. t other centres this difference was less marked, and n Glasgow no distinct difference could be detected. he most marked improvement in the children in ne milk groups was shown in children who had been n poor condition at the beginning of the test.

From the particulars gathered as to the home ietary of 626 households it would seem that the verage milk consumption in the home was 2·5 pints er head per week. The total milk consumption of ne children under test in these homes was then alculated on the assumption that the average con- umption per head in the household to which the

TABLE V.

ge of children	5–6 ..	8–9 ..	13–14
ncrease (inches) in height of—			
" Over average " group ..	1·58 ..	1·37 ..	1·51
" Under average " group ..	1·44 ..	1·19 ..	1·21
ncrease (per cent.) of " over average " to " under average " group	9·4 ..	615·5 ..	24·2

hild belonged was the home consumption of that hild, to which was added the amount received at chool. The rate of growth of children receiving nore than the average of the total milk consumption (home plus school) was compared with that of children receiving less than the average. Table V. shows the average rate of increase in height, in the " over average " and " under average " milk consumption groups.

Conclusions.

From this survey of the data it seems probable that, in the final report, it will be possible to draw the following conclusions :—

1. The addition of the milk to the diet of school-children, during the seven months' experimental period, has been accompanied by a rate of growth as indicated by an increase in both height and weight 20 per cent. greater than that in children not receiving the extra milk.

2. This increase in rate of growth has been accompanied by an improvement in the general condition of many of the children receiving milk.

3. Separated milk is of great value for promoting growth. Its nutritive value for children would appear to be under-estimated.

The writer wishes to record his indebtedness to Miss M. L. Clark, who has prepared the above tables, for valuable services in connexion with the supervision of the tests during their progress. Dr. Lewis D. Cruickshank, who superintended the investigation from the administrative side on behalf of the Committee, died towards the end of the test period, and we can only record our profound regret that we have not had the continued advantage of his intimate knowledge of school and social conditions.

The cost of the above tests was defrayed by a grant made by the Empire Marketing Board to the Rowett Research Institute, Aberdeen.

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SHEFFIELD HOSPITAL SUNDAY FUND.—This fund will keep its " diamond jubilee " this year, having been established in 1868. It is hoped to raise £6000, being £100 for each of the 60 years. Last year the amount was £3648, the successful penny-in-the-pound scheme having retarded the progress of the fund. The number of patients treated in the Sheffield hospitals last year equalled about one-quarter of the population of the city—there were more than 14,000 in-patients and more than 111,000 out-patients.

THE APPARENT INCREASE OF CANCER.

By D. F. SHEARER, M.B. Oxf., F.R.C.S. Eng.

Some years ago Dr. Stevenson published (in the annual report of the Registrar-General for 1917) an exhaustive analysis of the records of the deaths from cancer in order to determine how far the apparent increase of cancer was actual and to what extent it was the result of improved methods of diagnosis and certification, and concluded that these improvements were not sufficient to account for the increase. The present investigation was made to learn whether the conclusions then arrived at were confirmed by the figures of more recent years but the method adopted differs from that of Dr. Stevenson in three important particulars. For the most part the conclusions of Dr. Stevenson were based on crude death-rates. Here only standardised figures are used; and the error that may arise from the use of crude rates is well shown in the case of the tongue in the male. Using crude rates cancer of the tongue rose between 1913 and 1925 from 56 to 63 per million living; standardisation shows that in fact cancer of the tongue had fallen from 70 to 63 per million living. In the second place Dr. Stevenson grouped the sites of cancer into accessible and inaccessible, a distinction which is one of opinion and not of statistical fact. Here the grouping is made by rate of increase or decrease, and the resulting composition of the groups speaks for itself in relation to improvement in diagnosis and certification. Thirdly, the question is investigated of what change has taken place in regard to the large group of ill-defined deaths in later years of life which are attributed to "old age."

Table I. shows the actual numbers of deaths in both sexes, at all sites and in all age-groups of 1925 and 1913; and the standardised figures for 1913 based on the change in population at each age-group.

TABLE I.—*Showing the Numbers of Deaths in 1925 and in 1913 and the Numbers in 1913 standardised for Change of Population at 12 Age-groups, at All Sites in each Sex, and for the Tongue and Jaw in the Male Sex.*

—	All ages.	0–35	35–	40–	45–	50–	55–	60–	65–	70–	75–	80–	85–
MALES.													
All sites	24,002	606	329	752	1358	2466	3265	4071	4181	3447	2247	948	332
	16,918	626	358	726	1244	1777	2342	2833	2745	2189	1335	539	204
	21,744	*608*	*369*	747	*1606*	2291	3230	3900	3541	2824	1709	691	228
FEMALES.													
All sites	27,937	727	746	1467	2346	3149	3318	3809	3963	3609	2667	1457	679
	22,021	724	820	1373	1965	2480	2801	3078	3062	2728	1806	813	371
	28,235	703	*924*	*1550*	*2493*	*3273*	*3809*	*4160*	3884	3464	2400	1081	494
MALES.													
Tongue	1,180	5	4	15	70	136	202	232	226	165	83	33	9
	995	4	14	50	97	145	170	158	158	106	65	21	7
	1,306	4	*15*	*52*	*126*	*188*	*235*	219	205	136	*85*	27	8
Jaw	523	13	3	17	23	61	92	87	88	68	47	19	5
	482	21	6	9	39	52	82	90	80	55	27	14	7
	624	*20*	*6*	9	*51*	*67*	*113*	*124*	*103*	*74*	34	17	*8*

Standardised figures for 1913 exceeding the corresponding figures for 1925 shown in italics.

The number of deaths in 1925 was 51,939, while the actual and standardised figures for 1913 were 39,13 and 49,979 respectively. The increase of 12,800 is therefore reduced to 1960; made up of an increase in the male sex of 2258 and a decrease in the female of 298. Dividing into two main age-groups, under and over 65, it appears that at the lower age there is an increase in the males of only 96 and a decrease in the females of 1350; while in the later years the males increase by 2162 and the females by 1052.

TABLE II.—*Showing the Number of Cancer Deaths in 1925 in Various Groups Below and Over 65 Years as a Percentage of Corresponding Number of Deaths in 1913.*

—	All ages.	Under 65.	Over 65.	Deaths in 1925.
MALES.				
Group A ..	86	78	99	5,205
,, B ..	114	104	123	13,528
,, C ..	139	123	178	5,269
All sites ..	110	100	124	24,002
FEMALES.				
Group A ..	77	66	91	3,887
,, B ..	105	94	110	11,427
,, C ..	120	120	120	1,546
,, D ..	99	95	111	11,077
All sites ..	100	96	110	27,937

TABLE III.—*The Components of Groups A, B, C, and D.*

A.		B.	
MALE.	FEMALE.	MALE.	FEMALE.
Buccal.	Buccal.	Stomach.	Stomach.
Liver.	Liver.	Œsophagus.	Œsophagus.
Testes.	Brain.	Pharynx.	Pharynx.
Brain.	Abdominal cavity.	Skin.	Skin.
Abdominal cavity.	"Others."	Breast.	Intestines.
"Others."	Mesentery.	Intestines.	Rectum.
Mesentery.		Rectum.	

C.		D.
MALE.	FEMALE.	FEMALE.
Larynx.	Larynx.	Ovary.
Lung.	Lung.	Uterus.
Pancreas.	Pancreas.	Vulva.
Kidney.	Kidney.	Breast.
Prostate.	Bladder.	
Bladder.	Other specified organs.	
Other specified organs.		

TABLE V.—*Giving the Increases and Decreases between the Figures for 1925 and 1913 (Standardised) at each Age-group for All Sites, for Group C, and for "Old Age."*

MALES.

Ages ..	0–35	35–40	40–45	45–50	50–55	55–60	60–65	65–70	70–75	75–80	80–85	85–
All sites ..	−2	−40	+ 5	−248	+175	+ 35	+171	+640	+583	+ 538	+ 257	+4
Group C ..	+1	−12	+35	+ 47	+112	+131	+159	+227	+256	+ 186	+ 102	
Old age ..	..	..	..	..	..	..	..	−447	−1600	−2000	−2900	

It has not been found possible to print the full table showing the actual and standardised figures for each site. The male tongue and jaw are, however, given to show how the results are arrived at and these sites have been selected in view of Dr. Stevenson's statement in 1917. "The jaw and tongue furnish

instances the significance of which can hardly be called in question."

The proportion which the deaths at each site in 1925 bore to the deaths at the same site in 1913 (standardised) was then calculated and fell into three natural groups in the male. Similar groups were formed for the females together with a fourth which contained all sex organs. Table II. shows the result, and Table III. gives the constituents of each group. Group A is clearly composed of sites at which the diagnosis of cancer can be made by any practitioner; Group C is equally clearly composed of sites at which the diagnosis of cancer can only be made and is only made by practitioners who have devoted special attention to diseases of these sites. Group B includes cases of both varieties. It is interesting to note that Group D corresponds almost exactly with the figures for all sites in the same sex.

TABLE IV.—*Showing the Number of Deaths from Cancer in 1925 and 1913 (Standardised) Under and Over 65 and the Increases and Decreases; together with the Decreases in "Old Age."*

—	Males.		Females.	
	Under 65.	Over 65.	Under 65.	Over 65.
1925	12,847	11,155	15,562	12,375
1913	12,751	8,993	16,912	11,323
Increase or decrease	+96	+2,162	−1,350	+1,052
"Old age" decrease	..	−6,989	..	−5,510

Taken in conjunction with Table V. it is evident that Group C is the chief factor in producing the increase at lower years in the male; and it will be noticed that in each of the three ten-year age-groups up to 65 Group C is responsible for all the increase. And whatever opinion may be held as to the propriety of taking Group C as evidence of improvement in diagnosis the statistical fact is indisputable that out of an aggregate increase in both sexes of 1960 Group C is responsible for 1722.

During the period under investigation there has been a decrease after standardisation in the number of deaths attributed to "old age" of no less than 12,499; in the males of 6989 and in the females of 5510. Table VI. shows the percentages of deaths from cancer, old age, and other causes at the various age-groups in both years, from which it is clear that if the decrease in "old age" is distributed between cancer and other causes in due proportion the bulk if not the whole of the increase in cancer is accounted for. There is, however, one point at which the three factors, increase of population, improvement in diagnosis in Group C, and decrease of "old age," seem to be insufficient to account for the rise; that is between the ages of 65 and 70 in the male. The standardised increase at this age-group is 640, of which 227 are contributed by Group C. The decrease in "old age" is, however, only 447, and unless we were to assume that all these were cancer cases some further explanation is required. For some reason the rate of increase at this age is greater than in either the preceding or the succeeding five-year group, and inspection of the rates of increase at sites shows that it is attributable to an abnormal rise at two sites—stomach and intestine. It may be worth noting that at this age-group the fall in the death-rate due to causes other than cancer is less than in either of the adjacent age-groups.

TABLE VI.—*Giving the Deaths from Cancer, "Old Age," and other Causes Out of the Total Deaths at Age-groups Over 55 in 1925 and 1913.*

Ages	55–60	60–65	65–70	70–75	75–80	80–
Males.						
1925.						
Cancer	19·3	19·8	17·4	15	11	6
Old age	—	—	1·4	6·8	13	25·7
Other causes ..	80·6	80·2	81·2	78·1	76	68·3
1913.						
Cancer	15	15·4	14·1	10·3	8·3	4·5
Old age	—	—	3·2	12·7	21·4	45·1
Other causes ..	85	84·6	82·7	77	70·3	50·4
Females.						
1925.						
Cancer	24	22·6	19·1	14·7	11	6·4
Old age	—	—	2	7·6	13·8	28·2
Other causes ..	76	77·4	78·9	78·7	75·2	65·4
1913.						
Cancer	21·4	19·8	17·1	12·6	9·4	5
Old age	—	—	3·7	13·1	22·1	40·8
Other causes ..	78·6	80·2	79·2	74·3	68·5	54·2

Generally speaking, the statistics here brought forward tend to show that the increase of deaths from cancer is merely an apparent increase, and that there is in fact some slight decrease after due allowance is made for change of age-distribution of the population and for improvements in diagnosis and certification.

MEDICINE AND THE LAW.

A Gap in the Factory Acts.

WHILE the general revision of the Factory and Workshop Act seems for the moment to be as far off as ever, a specific omission in the existing law was disclosed at a recent inquest at Norwich. A fire occurred at a match store at Timberhill, Norwich, on Jan. 8th, and three women lost their lives. Dr. R. J. Mills (who had conducted the post-mortem examination) in his evidence before the coroner said that death was due to carbon monoxide poisoning, and must have happened before the burning, though the bodies were badly burned afterwards. One-fifth of the matches in the store caught fire, but this fraction was enough to cause immediate death. The coroner stated that he had taken the opinion of the Home Office upon the question whether the premises were to be deemed a factory within the Factory and Workshop Act or not. The answer was that the premises were not within the statutory provisions as to safety from fire. Nor, it appears, are matches to be deemed explosives within the Explosives Act. It is not surprising that the coroner's jury, when returning a verdict of "accidental death," added a rider unanimously recommending that goods of so dangerous a nature as matches should be stored under conditions which would better protect the workers' safety.

Penalties for Sale of Diseased Meat.

Public opinion will support the infliction of heavy sentences upon persons found guilty of the dangerous and disgusting practice of selling diseased meat for human food. In two prosecutions for this offence, recently recorded in the *Times*, the magistrates evidently took a serious view. Rose Hannah Gill, a butcher carrying on business in Bridgeman-street, Bolton, was fined various amounts totalling £180; inspectors gave evidence that they found 400 lb. of tuberculous meat on her premises in a cellar beneath the living-room, it being necessary to move furniture from the trap door giving access to the cellar. In another case, dealt with at the Marylebone police-court by Mr. Bingley, the stipendiary magistrate, a fine of £25 was imposed upon Eastmans, Ltd., of West Smithfield. In this case a joint of diseased meat attracted an inspector's attention. The defence was that it was part of a sheep's carcass from Australia and that it was most unlikely that the meat would be diseased. In passing sentence, Mr. Bingley criticised the inspector's failure to take immediate steps to discover what had happened to the rest of the carcass. The magistrate had little doubt that the other parts of the sheep had been sold to unsuspecting purchasers for human consumption. He commented on the fact that the maximum sentence (presumably under Section 47 of the Public Health (London) Act of 1891) was a fine of £50 or six months' imprisonment with or without hard labour, and he added that,

even if he wished to do so, he could not send a limited company to prison.

Charge of Cruelty to Animals: Successful Appeal.

If cats have to be destroyed, what is the most satisfactory method? Mr. R. J. Sargent, veterinary inspector to the Guildford Corporation, was fined £10 with £10 10*s*. costs last November for causing unnecessary suffering to two cats. It was stated at the police-court that he placed the cats in a lethal chamber containing chloroform for half an hour with a closed vent-hole, that when he took the cats afterwards to the destructor works they were still breathing, and that he then hit them with a sledge-hammer. A veterinary surgeon, giving evidence for the prosecution (conducted by the R.S.P.C.A.) said that he himself formerly kept the vent-hole of the lethal chamber closed when destroying cats, but that, having come to the conclusion that his former practice was cruel, he now kept the vent-hole open till the cats became unconscious. A cat, he said, should be kept in the chamber for at least an hour, and these two cats, if still alive, should have been killed by drowning, not by blows from a hammer. The defendant, who said he had destroyed about 600 cats in two years for a Guildford society, gave evidence that in his experience half an hour in the lethal chamber was sufficient. He was supported by Prof. Hobday, principal of the Royal Veterinary College, and other witnesses, and his appeal (to the Guildford Quarter Sessions) was allowed with costs.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

The Cancer Campaign in Ireland.

A MEETING to further the Cancer Campaign in Ireland was held at Belfast on Jan. 5th, being summoned by the Ulster Medical Society and the Ulster Branch of the British Medical Association. Dr. J. C. Rankin, President of the Ulster Medical Society, presided, and Mr. S. S. Pringle, of Dublin, outlined the objects of the Cancer Campaign in Ireland and the progress already attained. Among those who took part in the subsequent discussion were Dr. William Porter, Mr. Andrew Fullerton, the Marquis of Dufferin and Ava, Dr. Livingstone, Vice-Chancellor of the Queen's University of Belfast, Prof. R. J. Johnstone, M.P., Mr. Bryan Moore, Prof. J. A. Lindsay, Mr. A. B. Mitchell, and Dr. Leonard Kidd. The following resolutions were passed unanimously:—

1. That the National Cancer Campaign is worthy of support and that a Northern Ireland branch be established for the purpose of informing the public as to what is already known about cancer and of raising funds to assist in further investigation of the problems still unsolved.

2. That this meeting is of opinion that the plan of the National Cancer Campaign is the most suitable that can be adopted and is the most likely to lead to further progress, as under the present scheme those hospitals and laboratories which are already engaged in the treatment and investigation of cases of cancer will be assisted and encouraged to pursue their activities under a central direction, so that full use will be made of the services of their staffs of trained research workers, and of surgical, radiological, and biochemical experts.

3. That this meeting agrees with the decision of the National Cancer Campaign that it is not expedient to establish new special hospitals for the treatment and investigation of cancer, and that the results hoped for are more likely to be attained by development of the institutions already established.

A committee was appointed to carry out the objects of the meeting.

Maternity Accommodation in Belfast.

It has been recognised for some time that the existing accommodation for maternity work in Belfast is wholly inadequate. The present maternity hospital, which was opened in 1903, is a small institution and the pressure upon its accommodation has been constantly increasing. The need for better facilities has become urgent. There are reasons why the extension of the hospital on the present site would be difficult, and as an alternative it has been proposed that the Maternity Hospital should amalgamate with the Royal Victoria Hospital, which would erect a maternity block. This suggestion has been under consideration for several months, and has now been unanimously approved by the Corporation of the Royal Victoria Hospital and the Incorporated Society of the Maternity Hospital. It has been pointed out that this policy has many advantages. It is in line with the growing recognition of the desirability of all general voluntary hospitals including maternity work in their operations, as is the general practice in the United States and in Canada. Such association tends to efficiency and to economy. Maternity hospitals can hardly afford the expensive special departments which are now provided by all the great general hospitals, and collaboration of the staffs of the different departments is obviously highly desirable. The training of students and of nurses is facilitated by such an arrangement. Belfast has a large and flourishing medical school, but at present, owing to the lack of maternity accommodation in the city, many students have to seek their maternity training elsewhere. Economy is likewise secured by a joint administration, for small hospitals are necessarily more expensive to run than large hospitals. The present cost per bed per annum in the Royal Victoria Hospital is approximately £130, whereas the cost in the maternity hospital is approximately £170.

It is well known that the mortality in childbirth in the kingdom has been but little reduced in recent years and remains round about 4 deaths in 1000 deliveries. No one doubts that this mortality is largely preventable, or that its principal cause is the lack of adequate institutional treatment for maternity cases. The mortality in a well-equipped maternity hospital is very low, and in some cases almost negligible.

Steps have already been taken to effect the amalgamation of the maternity hospital with the Royal Victoria Hospital as promptly as possible. An appeal for £100,000 is being prepared, and the Duchess of Abercorn has consented to head the movement. The proposal is to erect a maternity block of 100 beds with facilities for extension.

Lunacy in the Irish Free State.

The report of the Inspector of Mental Hospitals in the Irish Free State for 1926 has recently been issued. The number of insane persons under care at the end of the year was 19,887, of whom 10,369 were males and 9518 females. There was an increase of 348 during the year, but the number was less by 249 than at the end of 1915. The number of deaths was 1037 and of discharges 1347, of whom 1051 were discharged as recovered. There were five deaths by suicide. The average cost per patient in the public mental hospitals was £49 1*s*. 4*d*. There are still 1994 insane patients in poor-law institutions.

The committee of the Grangegorman Mental Hospital—the asylum for the counties of Dublin and Louth—is occupied with the problem of providing additional accommodation. There are 200 more patients than in 1923, and the population of the asylum has virtually doubled in 30 years. It is stated that the Government will not allow any scheme of additional building to be undertaken until there has been time for consideration of the report of the Poor-Law Commission.

BUCHAREST.

(FROM OUR OWN CORRESPONDENT.)

Sale of Carbolic Acid.

THE Board of Health announces that in future no carbolic acid may be retailed to any person except on a medical man's prescription. An exception is made for solutions of less than 5 per cent. The Board's action can hardly be called timely, for it should have been taken years ago when the news

apers first pointed out how easy it was for would-be uicides to obtain the poison. Carbolic acid causes a eath which is painful beyond ready description, but he victim usually finds this out too late. It is one f the cheapest and most readily available means of elf-destruction and in this country is used in nearly ne-third of all suicides being especially attractive to omen. There is reason to believe that the new law ill do more than drive the desperate to other means f self-destruction.

Action of Salicylates on the Kidneys.

Dr. Dumitriu Popesco has carefully examined the rine of a number of patients who were receiving alicylates for rheumatism and had not previously uffered from disease of the kidneys. His investigaions make it clear, he says, that renal irritation may ollow the use of these drugs, but he does not regard his as an important argument against their use as he damage is not serious. Dr. Avramescu, studying he same subject, has made somewhat different bservations. Whilst pointing out that albumin and asts are found in large numbers of normal individuals, nd are therefore present in many rheumatic patients efore treatment begins, he states that when salicylates re exhibited the casts become more numerous, pithelial cells are abundant, and a desquamative atarrh of the entire urogenital tract is sometimes set p. He has even found coarse granular and waxy asts in some cases. An unusual feature of this form f renal inflammation is that it disappears even if dministration of salicylates in large doses is continued. linical symptoms of nephritis never appear, and it eems that if the patient is already suffering from this isease in a chronic form the antirheumatic drugs will uickly cause a fall in the quantity of albumin xcreted. The above observations, therefore, appear o have a theoretical rather than a practical value.

Total Extirpation of the Larynx for Carcinoma.

Dr. Paul Steiner has recently reported the following ase to the Cluj Medical Society :—

An agricultural labourer, aged 55, had been hoarse for ome months and had lost 21 lb. in weight. Examination ith the laryngoscope showed a new growth on the right ocal cord, which in some places had become cicatrised and odular. At a subsequent examination Dr. Steiner excised small piece of the growth intralaryngeally, and under the icroscope it was found to be carcinomatous. No infiltrated lands were present in the neck and the larynx was removed n Nov. 30th, 1927, under deep narcosis without previous racheotomy, a cannula being used only after the operation as over. As soon as the wound had healed an artificial arynx, as modified by Bruns, was brought into use, and this s still worn by the patient, who speaks quite intelligibly nd can make himself heard in a large room.

It was found that the growth occupied the whole left alf of the larynx, extending over the midline in front, nd downwards as far as the cricoid cartilage. Judging rom these appearances the patient could be cured nly by total excision of his larynx, and as Dr. Steiner oints out, his experience justifies the statement that reliminary tracheotomy is not always required in perations of this kind.

The Care of Old Age.

In the course of a popular lecture delivered here ome time ago Dr. Burghardt dealt with the means hat may be taken to preserve activity of mind and ody in the aged. It is universally admitted, he said, hat after middle life the amount of food taken should iminish, and the aim should be to decrease the onsumption of the structure-forming materials of iet, though they should not be dispensed with ntirely. Relatively little should be taken of the timulating elements of food which are used to make t attractive, and, in brief, we should eat no more han the perfectly normal appetite craves for, and s little as possible of those things which are merely greeable. As the period of old age approaches the egimen should be definitely simplified and meals hould always be taken with deliberation. Bread, milk, nd fruit are the most beneficial foods at this period of life. The tendency of old people to stay indoors should be discouraged, and too much heavy clothing should not be worn. The idea that the old should live as much like vegetables as possible, taking no exercise whatever, is erroneous and makes for premature decay. The disinclination to move and make efforts may be rather the result of under-oxygenation, of habit, or of what may almost be called senile laziness, than of an instinctive impulse towards functional economy. The real remedy for stiffness, digestive troubles, and the other discomforts and disturbances of old age is healthy exercise and a suitable diet.

The Services.

COMMISSIONS IN THE INDIAN MEDICAL SERVICE.

A CERTAIN number of appointments will shortly be made for permanent commissions. Well-qualified men of European descent, under 32 years of age, who wish to enter the Service should apply to the Under Secretary of State for India, Military Department, India Office, London, S.W. 1. The selected candidates will be required to attend a course of instruction in this country, commencing not later than Feb. 16th, prior to sailing for India in the early autumn. An announcement appears in our advertisement columns.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Comdr. F. E. Anley is placed on the Retd. List with the rank of Surg. Capt.

Surg. Comdr. A. G. Malcolm to *President* for course at R.A.F. Medical Officers' School of Instruction.

Surg. Lt.-Comdr. A. H. Harkins to *Delhi.*

Surg. Lt. F. W. Besley to *Broke.*

ROYAL ARMY MEDICAL CORPS.

Lt.-Col. C. R. Sylvester-Bradley, half-pay list, late R.A.M.C., retires on ret. pay on account of ill-health.

Capt. B. L. Davis to be Maj. (Prov.).

TERRITORIAL ARMY.

Capt. G. L. Pillans, late R.A.M.C., to be Lt., and reinquishes the rank of Capt.

INDIAN MEDICAL SERVICE.

The undermentioned officers relinquish their temp. commns. : Temp. Capts. Abinash Krishna Sen and Krishna Das Mukharji (and retain their rank), and Temp. Lt. Venkatachari Srinivasan.

ROYAL AIR FORCE.

Flying Officer J. D'Isney Rear is promoted to the rank of Flight Lt.

DEATHS IN THE SERVICES.

Lieut.-Colonel Robert Tilbury Brown, C.M.G., late R.A.M.C., who died on Jan. 21st, aged 54, was educated at the King's School, Rochester, and at Guy's Hospital. At Durham University he graduated in medicine and surgery in 1899 and proceeded to the M.D. degree in 1904, when he obtained the gold medal. After a few years of general practice he joined the R.A.M.C. in 1900 and served successively as specialist in charge of the laboratory at Lucknow, and sanitary officer of the Eastern Command and Burma Division. In 1914 he joined the forces in East Africa as D.A.D.M.S. (San.), G.H.Q., and O.C. Indian Sanitary Section. In 1916 he was appointed D.A.D.M.S., G.H.Q., and in 1917 A.D.M.S. He was mentioned in dispatches four times, created C.M.G., and awarded the D.S.O. Lieut.-Colonel Brown was O.C. Royal Herbert Hospital, Woolwich, from 1919 to 1921, senior M.O. Ceylon Command from 1922 to 1924, and senior M.O. Bordon, from 1925 to 1926, when he retired. He was a Chevalier of the Order of Leopold. Lieut.-Colonel Brown married Pauline, daughter of Mr. F. Normandy, barrister-at-law.

LIVERPOOL HOSPITAL FOR CANCER AND SKIN DISEASES.—This institution is appealing for £100,000 for its reorganisation and the provision of a radium centre and a fully equipped X ray department. It is proposed, among other things, to set aside beds for treatment by radium.

Correspondence.

"Audi alteram partem."

FATALITY-RATES OF SMALL-POX IN THE VACCINATED AND UNVACCINATED.

To the Editor of THE LANCET.

SIR,—Dr. Garrow has drawn attention to the greater relative number of deaths in the vaccinated-over-15 suffering from "mild" small-pox. Many years ago I took out the following figures for the Manchester epidemic of true small-pox for 1903–04.

—	No. of cases.	Deaths.	Fatality per cent.	True hæmorrhagic cases.	Percentage.
Unvaccinated ..	52	10	19·2	1	1·9
Stated to have been vaccinated.					
No cicatrix ..	35	6	17·1	1	2·9 } 4
One mark ..	65	7	10·8	3	4·6 }
More than one mark	362	7	1·9	2	0·6

So far as these figures go they show clearly for true small-pox that the case-mortality is lower the better the vaccination, and they also indicate that doubtful and poor vaccinations (one mark) give a larger percentage of hæmorrhagic cases. My apology for attaching any significance to these small figures is that hæmorrhagic cases are so few, even in a long series.

I assume that only the debilitated die from "mild small-pox." May it not be that the fatal result is due to a smarter initial reaction in the vaccinated and that hæmorrhagic small-pox is due to a similar cause in the inefficiently vaccinated?

I think that it is possible that the further inquiry for which Dr. Garrow presses and which might lead to a better understanding of reaction to infection may actually show (1) that long past vaccination may actually increase the chances of death resulting in the debilitated suffering from mild small-pox, and (2) that inefficient long past vaccination may increase the chances of a hæmorrhagic attack in true small-pox. The inquiry would also emphasise the importance of *efficient* vaccination which modifies the severity of the disease throughout life.

I am, Sir, yours faithfully,

DUNCAN FORBES,
Jan. 20th, 1928. Medical Officer of Health, Brighton.

To the Editor of THE LANCET.

SIR,—My attention has been drawn to a slight error in the tabular statement in my letter of Jan. 14th. The 94 cases in the year 1926 whose vaccination state is classified as doubtful are not included in the figure 3116 as stated in the footnote to the table. This means that the total number of cases for the four years is 10,925 instead of 11,019. This slip does not affect the fatality figures in the vaccinated and unvaccinated.

I am, Sir, yours faithfully,

R. P. GARROW.
Jan. 20th, 1928. Medical Officer of Health, Chesterfield.

THE PRESENT POSITION OF THE VOLUNTARY HOSPITAL.

To the Editor of THE LANCET.

SIR,—Dr. Graham Little does not improve his position. Out of nearly two columns of irrelevancies about his German professor, &c., not in the best of taste, a few things emerge.

He shows that his depreciation of other workers in order to exalt his own circle is not, as one supposed, merely an ignorant habit of mind, but a deliberately chosen line. In the articles in the *Times* to which he refers, he allowed himself to reflect, in a lay journal where he was protected from contradiction, not only upon the abilities, which I am not concerned to discuss, but also, which is unforgiveable, upon the standards of his medical brethren.

Dr. Little quotes without contradiction the statement that "the voluntary hospitals only do 20 per cent. of the work that comes to them," thus admitting one of the most serious defects alleged against the system. He has only two remedies. One is expansion of the voluntary hospitals; whence does he think the extra 80 per cent. of money is to come? The other is to take over those supposed hundreds of empty poor-law beds. In London, at any rate, they do not exist, as he would know well if he knew anything about the subject.

His contention that the voluntary hospitals have become more popular "as compared with other institutions" is palpably absurd, for it is common knowledge, and is indeed the origin of this present discussion, that crowds of patients now gladly enter poor-law hospitals who would never have consented to do so 20 years ago, and that the latter are far more comparable with the voluntary hospitals than was ever the case before.

Is not Dr. Little a politician; or, if he considers the term abusive, is he not, at any rate, a Member of Parliament? How can he really hope that publicly elected bodies would resign the control of their hospitals to a voluntary management? The improbability is obvious, but would take too long to discuss now.

In conclusion, I should like to say that criticism of Dr. Little does not necessarily imply opposition to the voluntary system or to some scheme of coöperation. But the approach will have to be very different from Dr. Little's.—I am, Sir, yours faithfully,

J. C. MUIR,
Medical Superintendent, Whipps Cross Hospital.
Jan. 23rd, 1928. (West Ham Board of Guardians).

THE FUTURE OF MEDICAL PRACTICE.

To the Editor of THE LANCET.

SIR,—I have read with much interest Mr. Somerville Hastings's article (in your issue of Jan. 14th p. 67) on the future of medical practice in England and I should like to make a few observations upon it. So far as the public health service is concerned, it is doing a splendid work for the nation's health, and has undoubtedly come to stay. The same also applies to the venereal disease centres. But it seems to me that other clinics (e.g., tonsil and adenoid, dental, maternity child welfare, &c.) are becoming increasingly unpopular both with the patients and the practitioners. So also are the poor-law hospitals.

The reasons for this unpopularity are not very difficult to trace, because the general practitioner who has charge of the patient after clinic treatment hears the patient's ideas, and is able personally to observe the results of such treatment. I would suggest that this lack of confidence is due to one or more of the following causes:—

1. Bad or incomplete work is done in some clinics. It is sometimes difficult for the practitioners to account for this to the patients without casting reflections upon the medical officer of the clinic concerned.

2. In event of any complication arising as the result of operative work done in a clinic, the patients have to be taken to their family doctor. The actual operator is therefore not available to carry out after-treatment.

3. Attendance at clinics often involves long waits, sometimes in the presence of verminous or even infectious children.

4. Compulsory medical examinations at school sometimes lead to expressions of opinion by the school doctor which differ from opinions previously given by the family practitioner. These occasional conflicts of opinion do much towards weakening faith in school doctors, because the average mother has great faith in her private doctor's opinion, partly because she pays for it, and partly because she considers that "her own doctor *understands* the case."

5. In the case of some poor-law hospitals the principal objection is the exceedingly rude and discourteous way in

which patients (yes, and sometimes practitioners too) are treated by the medical staff. There is also the objection which Mr. Somerville Hastings rightly points out, that no consideration is taken of the practitioner, in that no information is afforded him as to diagnosis and treatment of his patients. These, and other facts, all tend to make institutional centres more unpopular, and their future very uncertain. Many a mother brings her child to me to enucleate its tonsils or to "give it an overhaul" rather than to go to the provided centres.

The truth of the matter is that the general practitioner of to-day is a more all-round efficient man than he was, say, 35 years ago, and this fact alone contributes largely to the improved conditions *re* infant mortality, &c. Public provision *helps* towards this no doubt, but it must be borne in mind that only the poorer people take their children to these centres, whereas infant mortality has improved in the case of the well-to-do as well. This can only be due to the increased efficiency of the family practitioner.

I feel that many practitioners will agree with me that these clinics, &c., are far from popular with many people, and that the chief reason why a large number attend them is because they obtain cod-liver oil, patent milk foods, &c., free, or at a nominal price. It is, in fact, due to the all-too prevalent spirit of the times—the desire to get something for nothing.

I am, Sir, yours faithfully,
J. L. CYRIL DOYLE, M.R.C.S., L.R.C.P.

Harley-street, Jan. 24th, 1928.

MEMORIAL TO DR. JOHN THOMSON.

To the Editor of THE LANCET.

SIR,—Several of the friends and old pupils of the late Dr. John Thomson are anxious to establish some permanent memorial of his great services to pædiatrics in this country and to perpetuate the memory of a very lovable personality. We have been asked to serve as a committee to give effect to this object, and those who are in sympathy with it are invited to send subscriptions to Dr. C. McNeil (44, Heriot-row, Edinburgh) or to Dr. Robert Hutchison (32, Devonshire-place, London, W. 1), who are acting as treasurers. The form of the memorial has not yet been determined and must depend to some extent upon the amount obtained in response to this appeal.—We are, Sir, yours faithfully,

THOS. BARLOW, ROBT. HUTCHISON,
LEONARD FINDLAY, CHARLES MCNEIL,
GEO. F. STILL.

Jan. 18th, 1928.

THE DISPOSITION OF MEDICAL LIBRARIES.

To the Editor of THE LANCET.

SIR,—Your late assistant editor, Dr. H. P. Cholmeley, left me his personal effects, including his books, many of them dealing with medical history. Of these Mr. H. E. Powell, the librarian of the Royal Society of Medicine, made a selection which he wanted for the Society's library, taking 21 works which they had not got, and saying of others that they would "be very useful as second copies, being all interesting works."

There must be an increasing difficulty in securing old books for medical libraries in this country now, on account of the demand in America; within a few days of the announcement of Dr. Cholmeley's death I had an offer to purchase the whole of his library en bloc for an American buyer. This experience has led me to believe that it might be worth while to appeal to your readers to see that our own great libraries, and not only medical libraries, should have a chance of acquiring medical books belonging to deceased doctors.

Even the largest libraries have gaps. For instance, in 1905 I gave about 12 volumes to the Bodleian, mostly eighteenth and seventeenth century historical monographs, none of which they had; and in 1912 I gave a collection of foreign works on medico-social subjects to the Cambridge University Library. Again, the British Museum now has three books which I acquired for practically nothing. One was a volume of Theology printed in Lyons which had belonged to James I. and bore his arms and cypher on the binding; one was the suppressed list of George IV.'s debts, published by William Cobbett; and the third was the last known copy of the Official List of Coaches running out of London in 1832. Such finds may lie ready to the hand of the country doctor. King James's volume was not known to exist outside the Bibliothèque Nationale in Paris.—I am, Sir, yours faithfully,

A. MAUDE.

Forest Edge, Forest Row, Sussex, Jan. 18th, 1928.

MERCUROCHROME INTRAVENOUSLY.

To the Editor of THE LANCET.

SIR,—Two injections prove nothing, but their results may be of sufficient interest to communicate.

CASE 1.—An elderly Brahman with necrosis of the left half of the mandible. He was having frequent rigors and was obviously very ill. An incision over the mandible helped to evacuate the pus and at the same time I gave him 20 c.cm. of 1 per cent. mercurochrome intravenously. The rigors stopped and his condition rapidly improved, so that a few days later I was able to remove the necrotic half of the mandible, after which he made an uninterrupted recovery.

CASE 2.—A large and otherwise healthy European with gonorrhœa and prostatitis of a fortnight's duration. The injection of 20 c.cm. 1 per cent. mercurochrome intravenously was followed in six hours by a severe rigor, the temperature rising to 105° F. and the passage of mercurochrome-stained (i.e., crimson) urine. The moral effect on the patient was terrific, but the therapeutic effect was doubtful.

I am, Sir, yours faithfully,
H. WILLIAMSON,
Capt., I.M.S.

Quetta, India, Jan. 4th, 1928.

"THE CONDUCT OF MEDICAL PRACTICE."

To the Editor of THE LANCET.

SIR,—I have just read this book; it is a book of revelations. Who of the grey-headed amongst us but may wonder as to his ignorance of the many roads open to the young practitioner? No such guide as "The Conduct of Medical Practice" has been available until to-day.

The dean of a medical school is now in close touch with the students in a way that would have astonished and much benefited my generation. I do indeed hope that every dean will study the book and see to it that a reference copy is in the school library wherewith to forestall the chronic heartburn of undigested opportunity.

More than a passing acquaintance with foreign lands encourages me to suggest that a future edition might touch on the facilities and obstacles to general practice in countries other than Great Britain.

I am, Sir, yours faithfully,
FRANCIS POTT.

Florence, Jan. 18th, 1928.

OPERATIONS UPON THE ENLARGED PROSTATE.

To the Editor of THE LANCET.

SIR,—Having had a long and varied experience as an anæsthetist for these operations I think my evidence in support of Mr. Harold Edwards's statements (THE LANCET, Jan. 14th, p. 77) may be worth contributing. These are that exposure to view of the prostatic cavity does not unduly prolong the operation; that shock does not follow the insertion of the bladder retractor; that a varying degree of shock is always associated with prostatectomy, however performed, and is due entirely to the enucleation of the prostate from its bed. As general rules these are in accordance with my observations. In regard to the last, it may be remarked that Mr. Tyrrell Gray and Dr. Parsons showed some years ago that enucleation tends (like dilatation of the sphincter ani) to act as a powerful stimulus, and to be accompanied by a

sudden and marked rise of blood pressure. If enucleation is easy, the patient in fair health, and the anæsthesia or analgesia adequate, effects on the respiration and circulation may be unimportant; otherwise they may fail to respond, and shock in its clinical sense results.

I would add that shock due to stimulation of peripheral nerves must (as always in operations) be carefully distinguished from collapse due to other causes, such as chloroform, intrathecal injection, and emotion in conscious patients.

I am, Sir, yours faithfully,

London, N.W., Jan. 19th, 1928. J. D. MORTIMER.

GASTRO-DUODENAL ULCERATION.

To the Editor of THE LANCET.

SIR,—Presumably Prof. MacLean's duties afford him small opportunity of personal or intellectual contact with the general practitioner. Otherwise he could scarcely do him the injustice of supposing that he prefers to receive his information unbacked by references to the literature and in the form of confident assertion rather than ordered evidence.

In the third paragraph of his paper the following sentence occurs: "We are now satisfied that the results obtained by this method are better than any that have hitherto been described, and that recurrences are extremely rare." Now it would manifestly have been quite impossible in the short space of five years adequately to test all the other methods that have hitherto been described. Furthermore, methods so closely similar to his own as to be identical in action have long been in use, have already found their place in reputable text-books, have been discussed in the journals and at medical societies, and have been shown by others to expedite the healing of ulcers in the way which he now discovers.

Prof. MacLean and his colleagues claim—and no one with experience of the medical treatment of ulcer would question it—that they have cases treated four or five years ago still showing no evidence of recurrence, but they give no indication as to what proportion of cases treated four or five years ago remain healed. This is the kind of information which the thinking practitioner requires and has a right to expect from so authoritative a source as a hospital unit.

My criticism of the claim to "cure" has found unexpected justification, for the undiscerning daily press is already welcoming alkaline treatment as though it were something new and wonderful. In common with Prof. MacLean and many other colleagues I am anxious to see the possibilities of medical treatment in gastric ulcer more widely appreciated in the profession, but for the credit of medicine let us endeavour to ensure that the case is presented fairly, scientifically, and without extravagance. I am, Sir, yours faithfully,

Wimpole-street, W., Jan. 23rd, 1928. J. A. RYLE.

To the Editor of THE LANCET.

SIR,—May we reply very briefly to the letter of Prof. Hugh MacLean and his co-workers in your issue of Jan. 21st? The main purpose of our previous letter was to repudiate the suggestion, inherent in the original article of Prof. MacLean and Drs. Jones and Fildes, that the treatment they outlined was in any essential different from the Sippy treatment, which had long been in extensive use, prior to the date when they state that their investigations were begun. Particularly in view of the echoes which their article has provoked in the lay press, we are happy to note that they now disclaim originality for the method. With regard to our other criticisms and the excellent remarks embodied in the letter of Dr. J. A. Ryle, we are satisfied that time will support our views.

We are, Sir, yours faithfully,

T. IZOD BENNETT.
ALAN MONCRIEFF.

London, W., Jan 23rd, 1928.

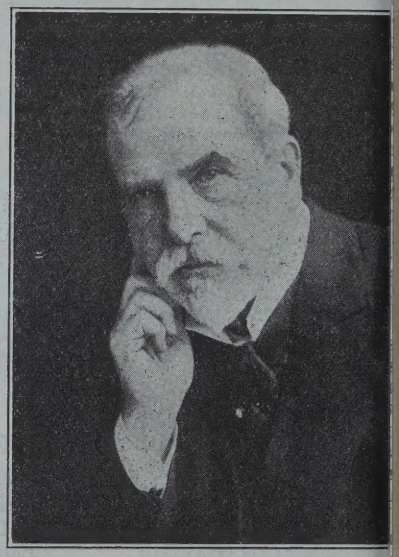
Obituary.

SIR DYCE DUCKWORTH, BART., M.D. EDIN.,

CONSULTING PHYSICIAN TO ST. BARTHOLOMEW'S HOSPITAL.

WE much regret to record the death, in the eighty-eighth year of his age, of Sir Dyce Duckworth, consulting physician to St. Bartholomew's Hospital, the Seamen's Hospital, and the Italian Hospital, and for many years well known in the consulting circles of London and elsewhere.

Sir Dyce Duckworth was born in November, 1840, the son of Robinson Duckworth, of Liverpool, by his wife, the daughter of Dr. William Nicol, of Stonehaven. He received his early education at the Royal Institution School, Liverpool, and the University of Edinburgh, completing his medical training at St. Bartholomew's Hospital, at the instance of Sir James Paget. He took the diploma of M.R.C.S. in 1862 and graduated at Edinburgh in Medicine in 1863 with the gold medal for medicine, and entered the Navy in the following year as assistant surgeon, but resigned his commission immediately on appointment as medical tutor to St. Bartholomew's Hospital Medical School. He was elected assistant physician to the hospital in 1868, simultaneously with Sir William Church, and F.R.C.P. Lond. in 1870. In 1883 he became full physician, a position which he held for 22 years, retiring in 1905 on attaining the age-limit, when he was appointed consulting physician. Thus he remained on the staff, and in the service of the hospital, either with or without wards, for no less than 40 years.



SIR DYCE DUCKWORTH.

Photograph by Elliott & Fry.

Words from two colleagues show the high appreciation in which he was held by the staff at St. Bartholomew's and its reasons. Dr. James Calvert writes: "Although 23 years have gone since Sir Dyce resigned his office of physician to St. Bartholomew's, until quite recently he was often at the hospital; thus he has never faded from the picture there and his memory is still green. Everyone there will mourn for him and feel sad when they think that never again will they see this very perfect gentleman walk into the square. He just loved the place; in its service he had passed the best years of his most useful and distinguished life. In 1886–87 I was his house-physician—a very happy year for which I must always hold him in grateful remembrance. Sir Dyce was a very good doctor—some great physicians are not good doctors—he was an admirable clinician with an unusual knowledge of drugs and a great belief in their usefulness. No doubt he was somewhat conservative. I think he always rather mistrusted the laboratory, for I remember his invariable advice to the young physician was 'Stick to the bedside.' This advice was considered archaic by many even in those r-off days, but in my opinion it is very sound specially at the present time. Some people have thought that Sir Dyce was 'peppery'; well, he was

n some subjects, but this only made him the more ttractive, while he was too kind-hearted to be really ntolerant. He was devoted to his ward work, very apable, very careful, and above everything else an nduring example to all who worked under him of the onscientious discharge of the duty he had undertaken oth to his patients and to his pupils. He examined ach patient once a week as thoroughly as their ondition allowed, and he required a corresponding xamination and report from the clinical clerk oncerned. Thus, at the end of their three months' lerking his clerks, as the result of much practice, ad a very fair knowledge of physical signs. And hysical signs, on the medical side, appear to me still o be the most important part of a student's training n hospital. His visits to the wards were long and rduous to all concerned—it could not be otherwise onsidering the amount of work he put into them. n a recent occasion I remember he said to me: Character is everything.' Well, I admire and revere ir Dyce Duckworth's character."

Another colleague, of similar standing on the staff, rites: "Sir Dyce Duckworth was a good example f the old style of physician. He began when linical observation and morbid anatomy were almost he only methods of study and when physicians were eldom equipped with the ophthalmoscope and the aryngoscope. He had a good knowledge of skin iseases, but he was interested in the studies of general ervous disorders by which Charcot made such an mpression in the middle of the last century; but the iscoveries of the functions and pathology of the pinal cord and nerves came rather too late to attract is chief attention, which by that time was fixed on he general diseases, such as gout and rheumatism, of hich he was a diligent student, and of the diseases f the heart, lungs, and abdominal viscera. Of these is knowledge was great, and his opinion in such cases as very valuable. He took enormous pains over his ospital work, in which he delighted and visited his ards more often, and in longer visits, than any other hysician. His round, which began at half past one, equently lasted till close upon five o'clock, and a ibald critic once declared that all his house physicians ere afflicted with varicose veins. But he was a lesson o us all in conscientious discharge of duty and for his eal delight in clinical study and practice. For he was great practitioner as well as a great student. He had firm faith in drugs, and he was a far better prescriber han most physicians nowadays are. He sometimes aid that those who disbelieved in drugs did not know ow to use them. It is not certain that he was wrong, hough the fashion was, and is, against him. For the est he was a cultivated man, a good French scholar, nd a most honourable gentleman. He had a great lea of the dignity of his profession, and of the ollege of Physicians, and he was sometimes a little ompous. But there were few who did not like him, nd none who did not respect him.: 'He nothing ommon did or mean.'"

Retirement from daily association with St. Bartholomew's Hospital implied with Duckworth no retirement om active work. In 1907 he was elected physician o the Seamen's Hospital, Greenwich, and in 1910 to hat of the Italian Hospital, so that it is not surprising, aving a wealth of clinical material under his eye or so long a period, that he became well known as a onsultant not only in the particular rheumatic and outy affections with which his name is chiefly ssociated, but in medical cases generally, where he as found sound in diagnosis and resourceful in eatment.

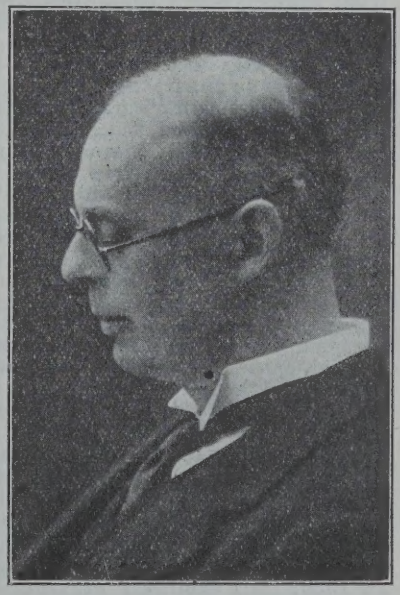
Duckworth's connexion with the Royal College of hysicians of London was a very long and intimate ne. He was a Fellow of the College for 58 years and erved on the Council and on the Censors Board, eing Senior Censor in 1903. He was early singled ut by the College for posts of responsibility, being ppointed treasurer in 1884 and representative of the ollege on the General Medical Council in 1886. The tter post he held for 15 years, while at the time of is death he was emeritus treasurer. In 1896 he delivered the Lumleian lectures on "Sequels of Diseases"; and in 1898 he was Harveian Orator, taking as his subject "Character and Judgment in Medicine." His two deliverances form a close reflection of his personal faith and ideals; they display his high conception of medical ideals, and his trust in authority, human as well as divine, as necessary for right conduct.

On the erection of a Conjoint Board of Examinations under the joint management of the Royal Colleges Duckworth became one of the managers and played an active part in the reforms in education which followed this wise amalgamation of forces. He was the representative of his College, also, as a governor of the University of Liverpool. His services as an examiner were requested by the Universities of Edinburgh, Durham, and Victoria, by the Royal College of Physicians of London, and by the Navy, while he was a medical referee to the Treasury. At different times he received many professional honours, being an hon. M.D. of Cincinnati and the Royal University of Ireland, a member of Convocation of Queen's University, Belfast, and an hon. F.R.C.P. Ireland. He was also LL.D. Edin. and a Knight of Justice of the Order of St. John of Jerusalem. He was knighted in 1886 and shortly afterwards appointed honorary physician to the Prince of Wales, afterwards King Edward VII., and in 1909 was created a baronet. He was a past president of the Clinical Society and a corresponding member of the Académie de Médecine and of the Société Thérapeutique, of Paris, appropriate honours, for he was a fluent speaker of French.

Sir Dyce Duckworth was twice married, first to Annie, widow of the late Mr. John Smith, of Mickleham Hall, Dorking, and secondly to Ada, daughter of Mr. G. A. Fuller, of the Rookery, Dorking, and leaves by his first wife a son, Mr. E. Dyce Duckworth, I.C.S., who succeeds to the baronetcy.

BASIL THORN LANG, B.CHIR. CAMB., F.R.C.S.

Basil Thorn Lang was the only son of Mr. William Lang, consulting surgeon to the Royal London Ophthalmic Hospital and consulting ophthalmic surgeon to the Middlesex Hospital. He was educated at Abbotsholme and Trinity College, Cambridge, and graduated in 1902 with first-class honours in the Natural Science Tripos, completing his general medical education at St. Bartholomew's Hospital. Following in the footsteps of his father, he specialised at once in ophthalmology, working as clinical assistant at "Moorfields" and first as clinical clerk and later as ophthalmic house surgeon at St. Bartholomew's. In order to gain operative experience he went to India for six months and studied under Colonel Henry Smith at Jullundur and under Colonel R. H. Elliot at Madras, thus becoming a dexterous operator.



MR. BASIL LANG.

Photograph by Stuart.

Colonel Smith writes: "I came to know Mr. Basil Lang as a guest in my house and at my hospital

at Amritsar. During that time we discussed a wide range of things scientific and others, and I then came to the conclusion, since confirmed, that he was a man of exceptional ability with a wealth of information and with fearless moral courage. In difficult cases of refraction he had very few equals. Cases came to me often as a sort of last hope, each with a pocket full of glasses and diagnoses down to and including the early stage of cataract. I am not a refractionist and I sent the patients on to Mr. Lang. In every case his first glasses acted as a charm, and I received letters of thanks from the patients saying that they had been relieved of all their worries. In other fields he was equally brilliant, and the ophthalmic section of our profession has suffered a great loss in his death."

At the outset of the war he at once joined the R.A.M.C. and served practically continuously in France throughout the hostilities. At first he devoted his energies to X ray work, and by means of his inventive gifts, combined with his technical knowledge, he devised and built in France the first mobile X ray unit for use in the front areas; when the King met with his serious accident, Lang and his unit were immediately sent for to X ray His Majesty. Shortly after a serious illness led to his being invalided home for several weeks, and from this he probably never completely recovered; but on returning to duty he became ophthalmic specialist and did valuable work both at Rouen and Etaples. An enthusiastic photographer, he did some excellent colour plates of trench feet, and his X ray work is well described in the following note from a military co-worker:—

G. T. L. writes: "Early in 1915 I found Basil Lang at Rouen, busy as X ray specialist to No. 8 General Hospital. Although 'eyes' were his specialty, he was an adept at X ray work, and his department was extraordinarily well run and full of ingenious devices and self-made improvements on the regulation X ray apparatus. He was a very great help to me in the rapid X ray localisation of foreign bodies in the eye—my unit took in all the eye wounds. His spare time was spent in making friends with French doctors and civilians, always with a view to devising some new apparatus or improving an old one, not only for radiological, but for surgical and ophthalmic use as well. Often one would meet him emerging from some obscure back street with a grin on his face, and his great voice would boom out and tell you how he had just unearthed and befriended a workman who would make for him some special instrument or apparatus. He had made a wonderful series of colour photographs of trench feet, for he had quickly realised the need of X rays nearer the fighting line. With characteristic energy he raised funds, designed, and had made a travelling, self-contained X ray lorry; this entailed a vast amount of work, first to obtain official sanction, and then to get the unit made. Many visits to Paris were necessary for the special electrical apparatus, but in the autumn Lang went up the line in charge of No. 1 mobile X ray unit, which he used later to examine the King after his fall from a horse. His carrying out of the idea was original and, as events proved, extremely useful; it was adopted later by the War Office, though the pattern was not exactly copied, as French apparatus had been used. It was at times such as this that one realised the extraordinary mental and physical energy of Basil Lang; he was always striving after something better."

After the war he was appointed assistant surgeon to the Western Ophthalmic Hospital and Lang Research Scholar, posts which he held till his election to the staff of the Royal London Ophthalmic Hospital in 1920. No summary of Lang's medical achievements would give a clue to the versatility or brightness of his intellectual activities. Having a clear and broad grasp of the principles of physics as well as a gift for constructive detail, he understood the diverse practical working of motor-cars, the telephone, the wireless, as well as the various optical instruments. Consequently he welcomed enthusiastically any clever invention—and he himself devised ma several of which he patented, one of the most nota being a long distance range-finder. He had origi methods both of treatment and operating, and sho considerable resource. He invented several ingeni ophthalmic instruments, chiefly various forms perimeter and an operating lamp, and he deligh in any new type of apparatus which extended to ophthalmic surgeon further powers of observati This is well shown in his writings—in his book, Routine Examination of the Eye (an amplif edition of his father's excellent handbook— Methodical Examination of the Eye) and in papers on perimetry and scotometry; all these sh his capacity for minute observation and his original of thought. With such a versatile and active m it was felt generally that he was capable of work far-reaching value, and the cutting short of his life its prime is, from a professional point of view tragedy.

An intimate friend writes: "His outstand feature was his ebullient vitality and quickness mind, combined with a good nature which, wh roused, could be genuinely quixotic. A large numb of friends, who fell under the spell of his refresh vitality, will feel his loss deeply, while his chee forgiving nature—proof against opposition or rebuf will have saved him from having made a sin enemy." And from Mr. Basil Lang's chief assist at Moorfields we have received the following tribu endorsed by his house surgeons: "It is difficult imagine a more refreshing and a more stimulati chief than Mr. Basil Lang. His exceptional knowled of physics combined with an unconventional gc humour and a cheerful readiness to give an opini always apposite, which would help to solve a probl or throw light upon a controversy, made him a teach of great value and a companion of exceptional char Every question of interest which came under d cussion had been considered by him from a viewpo just a little different from that of others, and he wo offer a reasoned argument built on sound knowled In the operating theatre his personality fou expression in his generosity to the house surgeo in the instruments he used, in the operations performed, and in the views and ideas he discuss between cases. He had a profound respect for t evils consequent upon having capsule in the wou of his cataracts and almost invariably did sim extractions followed by an anterior chamber wash-o For glaucoma he preferred Lagrange's operation, o modification of it, to trephining, and he frequen did Herbert's sclerotomy. A picturesque feature his work was his use of green towels to avoid distracti glare. He was an operator of real skill, but it probable that his greatest pleasure was in t examination and treatment of his out-patients. W who, either 'upstairs or down,' worked under h at Moorfields, feel that by his death we have lost r only a friend but a rare and valued source of kno ledge and new ideas."

Basil Lang's activities were much impaired some two years before his death with arthrit which laid him up for weeks at a time; yet he bo his disabilities with never a complaint and with t utmost pluck, while every form of new treatme was tried with astonishing optimism.

He was only married 11 months ago, and all w knew him will offer his widow, his father, and sist their deep sympathy in the irreparable loss th have sustained.

THOMAS TOMBLESON BRUNYATE, M.D. OXF.

IT is with regret that we record the death of T. T. Brunyate, which occurred on Jan. 1st, Chaucer's House, Woodstock, in the 61st year his age.

Brunyate was educated privately and at Oxfo where he was a scholar at Christ Church, having special aptitude for mathematics, which was a fami

rait. From Oxford he won an entrance scholarship t St. Mary's Hospital in natural science, and was ventually house physician in this hospital. He took he M.B. and B.Ch. Oxf. in 1892, and the M.D. degree 1 1894. In addition to attaining academic distinction e was a cultivated man in the widest sense and one f outstanding ability; he was obviously fitted for ome of the higher branches of his profession, and yet e deliberately chose the career of the country doctor, choice which neither he nor any concerned had ver any reason to regret. He practised first in Rochester, and became physician to St. Bartholo-new's Hospital in that city. Then, some 20 years go, he removed to Woodstock, attracted by its earness to his University. There he continued to he end, showing by his life the full possibilities of is calling and its adequate scope for applying cientific attainment with the utmost human interest. He was an ardent lover of Nature and of the simple hings of life. He was a good oar in his day, and a ood golfer and tennis player to the end, and also a ood teacher of these as well as of mathematics, s the prowess of his children in several directions as made clear. (Take tennis as an instance, his wo daughters have representative colours both for he University and for the County of Oxford.) He lways took a keen interest in his University and that f his children, and participated in the post-graduate ork connected with the Radcliffe Infirmary; one on and one daughter are already engaged in the study f medicine. A colleague writes: "Brunyate was man of high integrity which, added to his ability nd humanity, gained him the respect and admiration f the whole neighbourhood in which he lived and orked. To his widow and children the utmost ympathy will be extended with the assurance that he works of her husband's fine life are even now ollowing him and will continue to do so."

His death called forth an extraordinary manifestation of respect and affection from a wide area, including, ut far outreaching, his own home district.

THEOBALD ADRIAN PALM, M.D. EDIN.

To Dr. Adrian Palm, whose death has occurred at Aylesford, belongs the credit of having set out as ong ago as 1890 the view that rickets is due to leprivation of sunlight. His communication to the *Practitioner* in that year on the Geographical Distribution and Ætiology of Rickets unfortunately attracted ittle notice, and his suggestion was only recalled when he investigations of other workers had established he relation which he postulated. Born at Colombo nearly 80 years ago, he was the son and grandson of Presbyterian missionaries. He graduated in arts at he University of Edinburgh in 1867 and in medicine ix years later, and after a short spell as resident nedical officer to the Cowgate Dispensary he followed he family tradition by going out to Japan, for the Edinburgh Medical Missionary Society, to the Niigata Mission Hospital. There he remained ten years and made many observations on the customs and diseases of the population, some being contained n a work entitled "Kakke: A Study of Disease in Japan," and others in reports to English and Scottish nedical journals. Returning to this country he took up general practice at Wigton and was appointed nedical officer of health for the Wigton Urban District. Twenty-three years ago Dr. Palm moved o Aylesford in Kent, where he lived until his death, and in 1924, in recognition of his early observations on rickets, he was elected president of the newly formed Sunlight League. Whilst in Japan he married Miss Collas, of Jersey, who was also engaged in missionary work.

NORTH STAFFORDSHIRE ROYAL INFIRMARY.—During he past year workmen's contributions to the Stoke-on-Trent Hospital amounted to £27,681, which is £600 above he "record" achieved in 1925.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED JAN. 14TH, 1928.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 398 (last week 275); scarlet fever, 1733; diphtheria, 1306; enteric fever, 48; pneumonia, 2108; puerperal fever, 54; puerperal pyrexia, 126; cerebro-spinal fever, 9; acute poliomyelitis, 7; acute polio-encephalitis, 3; encephalitis lethargica, 25; continued fever, 1; dysentery, 12; ophthalmia neonatorum, 118. There was no case of cholera, plague, or typhus fever notified during the week.

The cases of small-pox were notified from 18 counties—viz., Bedford 1 (Bedford), Derby 15, Durham 71, Isle of Ely 4, Lancaster 30, Leicester 3, Lincoln, Parts of Lindsey 7 (Lincoln C.B.), Northampton 1 (Kettering), Northumberland 14, Nottingham 14, Stafford 2, Sussex West 4, Warwick 19, Yorks North Riding 12, West Riding 87, Brecknock 21, Glamorgan 36, Monmouth 57.

Since this return was made up ten cases of small-pox have been reported from Barnet and isolated at Cheshunt. Six of these were patients and one a nurse in the Wellhouse Poor-Law Hospital; the remaining three were children at the Guy's Cliff cottage homes.

In view of the number of cases of small-pox reported among casuals from different parts of the country, the Minister of Health has directed poor-law medical officers from now until March 31st to examine all casuals on admission to the workhouse, stripping them to the waist for efficient inspection.

Deaths.—In the aggregate of great towns, including London, there was no death from small-pox or enteric fever, 91 (31) from measles, 7 (2) from scarlet fever, 23 (4) from whooping-cough, 48 (7) from diphtheria, 61 (11) from diarrhœa and enteritis under two years, and 145 (16) from influenza. The figures in parentheses are those for London itself. Of the 60 fatal cases of measles outside London 11 were reported from Bristol, 18 from Manchester, 1 from Salford, 4 each from Croydon and Brighton; while the figures from Glasgow and Dublin for the same week were 46 and 11 respectively. The number of stillbirths registered during the week was 300 in the great towns, including 49 in London.

The death from small-pox reported in last week's return from Bradford occurred in the North Bierley Institution, Clayton, just outside the county borough boundary. The cause of death was certified by the medical officer in charge as: (*a*) myocarditis, (*b*) senility, (*c*) small-pox. There was no evidence of the patient having been vaccinated.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—On Monday, Jan. 30th, at 5 P.M., at the rooms of the Medical Society of London, 11, Chandos-street, Cavendish-square, W. 1, Dr. Vincent Coates will lecture on the Principles of Spa Treatment. On Jan. 31st, at 10 A.M., at the Brompton Hospital for Consumption, Dr. Burrell will give a clinical demonstration, and on Feb. 2nd, at 2 P.M., at the Royal National Orthopædic Hospital, Mr. W. H. Trethowan will demonstrate. On Feb. 3rd, at 5 P.M., at the Royal Westminster Ophthalmic Hospital, Mr. W. H. McMullen will give a lecture-demonstration on Lacrymation: Its Causes and Treatment. The lecture and demonstrations are open to members of the medical profession without fee. From Jan. 30th to Feb. 25th a course will be held at the London School of Dermatology (St. John's Hospital); clinical instruction will be given in the out-patient department every day and lectures on Tuesdays and Thursdays, at 5 P.M. (practical pathological demonstrations can also be arranged). From Feb. 6th, for four weeks, a course in Venereal Disease will be given at the London Lock Hospital during the afternoons and evenings, consisting of clinical instruction and lectures. From Feb. 6th to 18th a course in Diseases of Children will be given at the Paddington Green Children's Hospital and the Victoria Hospital for Children. From Feb. 20th to March 3rd, at the Queen Mary's Hospital, Stratford, an all-day course will be given in medicine, surgery, and the specialties. The entire practice of the hospital will be open to those taking the course. From Jan. 30th to March 23rd, at the National Hospital, Queen-square, a course will be held in neurology, anatomy, and physiology of the nervous system, and demonstrations will be given in methods of examination and in pathology. Information, syllabuses, tickets, and copies of the *Post-Graduate Medical Journal* may be had from the Secretary of the Fellowship at 1, Wimpole-street, London, W.

Medical News.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH, ROYAL COLLEGE OF SURGEONS OF EDINBURGH, AND ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.—The following candidates have passed the Triple Qualification Examination:—

FINAL EXAMINATION.

M. O. Chacko, P. G. Sawmy, H. F. N. Slane, E. E. M. Steen, E. S. R. Menon, W. W. McGlashan, R. G. Paranjape, J. B. Forrester, S. E. W. Boland, V. Sinnetamby, S. T. Sodah, Sinnathamby Chelliah, F. H. Emery, J. H. M. Beck, Bangalore Jaya Ram, James Masilamani, W. B. Russell, A. G. Smith, N. C. Dasgupta, A. M. Boyne, H. C. Furst, E. P. N. Abeyesundere, B. J. Ess, J. E. D. Mendis, G. R. Gardner, J. M. Chittambalam, Maurice Klar, K. L. Palit, F. W. Raysmith, J. C. Anders, and J. E. Felix.

UNIVERSITY OF WALES.—The following candidates have satisfied the examiners:—

M.B., B.CH.

Medicine, Surgery, and Obstetrics—John H. Williams, William G. Evans, and Trevor R. Bryant.

UNIVERSITY OF LONDON: *University College Hospital Medical School.*—Applications are invited for the Radcliffe Crocker travelling scholarship in dermatology, which is worth about £280, and is tenable for 12 months, to be spent in a place of study outside the United Kingdom.

London School of Hygiene and Tropical Medicine.—A research studentship in protozoology is offered at this school. It will in general be held for two years, and remuneration is at the rate of £250 a year. Details of both these appointments will be found in our advertisement column.

UNIVERSITY COLLEGE HOSPITAL, LONDON.—Dr A. F. Tredgold, who has been appointed an associate physician of the hospital in psychological medicine, will hold a special clinic for conditions of delayed and incomplete mental development or alternatively for cases of mental deficiency, retardation, and allied conditions, the clinic being the first of its kind to be established at a hospital with a medical school. The new clinic will not only afford opportunities for students to gain a knowledge of mental deficiency and allied conditions but will, it is hoped, constitute a further step towards bringing psychological medicine into touch with general medicine. The clinic will be held in the out-patient department of the hospital on Thursdays at 11 A.M., commencing Feb. 2nd.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—The Hunterian Oration will be delivered at the College by Sir Holburt Waring on Tuesday, Feb. 14th, at 4 P.M. Fellows and Members of the College are invited to attend.

MEDICAL OFFICERS OF SCHOOLS ASSOCIATION.—The annual general meeting of this association is to be held at 11, Chandos-street, London, W., on Friday, Feb. 10th, at 5 P.M. (tea 4.30 P.M.), when Dr. A. A. Mumford will read a paper on the School Medical Officer of the Future.

EUGENICS SOCIETY.—The Galton anniversary dinner will be held at the Rembrandt Hotel, Brompton-road, S.W., on Thursday, Feb. 16th, at 7.15 P.M. The Galton lecture will be delivered by Mr. C. J. Bond, F.R.C.S., whose subject will be the Distribution of Natural Capacity in the Population and the Need for National Stock-taking.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.—The College will be closed during the month of February for internal painting and decorating.

SOCIETY OF MEDICAL OFFICERS OF HEALTH.—The Maternity and Child Welfare Group is meeting this week-end at Edinburgh under the presidency of Dr. E. H. T. Nash, with the support of Mr. Alexander Miles, President of the Royal College of Surgeons of Edinburgh, and Dr. W. Robertson, medical officer of health for the city. To-day (Saturday) there will be a clinical meeting at Pilton Hospital, with a lecture demonstration on congenital syphilis by Dr. David Lees at 10.30 A.M., and two afternoon sessions (2.30 to 4 P.M.) will be held at the Royal Hospital for Sick Children and the City Fever Hospital, when papers will be read by Prof. Leonard Findlay, Dr. Chas. McNeil, Prof. John Fraser, Mr. D. S. Middleton, Dr. J. A. Stephen, and Dr. T. Y. Finlay.

As the report of the Departmental Committee on Vaccination has not yet been published the discussion on the Control of Small-pox, arranged by the society for Feb. 17th, is postponed until Friday, March 16th. The next council meeting of the society is also postponed until the latter date.

ROYAL LONDON OPHTHALMIC HOSPITAL.—The annual dinner of past and present students will be held at the Langham Hotel, Portland-place, W., on Wednesday, Feb. 8th, at 7 for 7.30 P.M. Sir Wilmot Herringham will take the chair. The secretary is Sir William Lister, 24, Devonshire-place, London, W.

THE fifteenth annual post-graduate week for midwives, arranged by the General Lying-in Hospital, York-road, London, S.E., will be held from May 21st to 25th. Names should be sent to the secretary, Post-Graduate Week, c/o the Hospital.

TRUE TEMPERANCE ASSOCIATION.—The annual meeting will be held at the Caxton Hall, Westminster, on Monday, Jan. 30th, at 5 P.M. Lord Lamington will take the chair and Sir William Arbuthnot Lane will be one of the speakers.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

WEDNESDAY, Feb. 1st.—5 P.M., HISTORY OF MEDICINE. Papers: Dr. G. A. Auden: (1) The Gild of the Barber Surgeons of the City of York. (2) Note on an Ancient Medical Manuscript in the Library of York Minster. 8.30 P.M., SURGERY. Pathological Evening.

THURSDAY.—8.15 P.M., TROPICAL DISEASES. Discussion on Life Assurance in the Tropics. Opened by Sir William Prout, followed by Mr. H. E. Raynes, Dr. J. F. C. Haslam, and others.

FRIDAY.—5 P.M., LARYNGOLOGY. (Cases at 4 P.M.) Cases and Specimens will be shown by Mr. Norman Patterson, Dr. Dan McKenzie, Sir James Dundas-Grant, Mr. Ridout, Dr. Jobson Horne, Mr. Barwell, and others. 8.30 P.M., ANÆSTHETICS. Paper: Mr. A. Douglas Cowburn: Death occurring under Operation, or Before Recovery from Anæsthesia.

SATURDAY.—10.30 A.M., OTOLOGY. (Cases at 9.30 A.M.) Papers: Dr. Alexander Fleming: The Bactericidal Power of the Blood and Methods of Altering it. Dr. A. Lowndes Yates: Methods of Estimating Alteration in the Middle Ear by Means of Quantitative Tests of Hearing. (Demonstration of audiograph.) Cases and specimens will be shown by Sir James Dundas-Grant, Dr. H. Norman Barnett, Mr. H. J. Banks-Davis, Mr. C. Hamblen Thomas, and others.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, Jan. 30th, to SATURDAY, Feb. 4th.—FELLOWSHIP OF MEDICINE LECTURE at the Medical Society of London, 11, Chandos-street, Cavendish-square, W. Mon., 5 P.M., Dr. Vincent Coates: The Principles of Spa Treatment.—BROMPTON HOSPITAL FOR CHEST DISEASES, Brompton. Mon., 10 A.M., Clinical Demonstration by Dr. L. S. Burrell.—ROYAL NATIONAL ORTHOPÆDIC HOSPITAL, 234, Great Portland-street, W. Thurs., 2 P.M., Mr. W. H. Trethowan: Special Clinical Demonstration.—ROYAL WESTMINSTER OPHTHALMIC HOSPITAL, Charing Cross, W.C. Fri., 5 P.M., Mr. W. H. McMullen: Lecture-demonstration—Lacrimation: Its Causes and Treatment.—BETHLEM ROYAL HOSPITAL, St. George's Fields, S.E. Course in Psychological Medicine. Lecture-demonstrations Tues. and Sat., 11 A.M.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, W.

MONDAY, Jan. 30th.—10 A.M., Dr. Dowling: Skin Department. 11 A.M., Mr. Tyrrell Gray: Surgical Wards. 2 P.M., Dr. Trevor Davies: Gynæcological Department.

TUESDAY.—2 P.M., Dr. Shaw: Medical Out-patients. 2 P.M., Mr. Sinclair: Surgical Out-patients. 2 P.M., Mr. Hamblen Thomas: Throat, Nose and Ear Department.

WEDNESDAY, Feb. 1st.—10 A.M., Dr. Burnford: Medical Wards. 2 P.M., Mr. Tyrrell Gray: Operations. 2.30 P.M., Mr. Donald Armour: Surgical Wards.

THURSDAY.—10 A.M., Dr. Grainger Stewart: Neurological Department. 2 P.M., Mr. MacDonald: Genito-urinary Department. 2 P.M., Mr. Bishop Harman: Eye Department.

FRIDAY.—10 A.M., Dr. Pritchard: Special Medical Treatment Clinic. 2 P.M., Mr. Vlasto: Throat, Nose and Ear Department. 2 P.M., Dr. Shaw: Medical Out-patients.

SATURDAY.—10 A.M., Dr. Burnford: Bacterial Therapy. 10 A.M., Dr. Owen: Medical Diseases of Children.

Medical and Surgical Out-patients, Operations, Special Departments, daily, 10 A.M. to 5 P.M., Saturdays, 10 A.M. to 1 P.M.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham.

MONDAY, Jan. 30th.—2.30 to 5 P.M., Medical, Surgical, and Gynæcological Clinics. Operations.

TUESDAY.—2.30 to 5 P.M., Medical, Surgical, Throat, Nose and Ear Clinics. Operations.

WEDNESDAY, Feb. 1st.—2.30 to 5 P.M., Medical, Skin, and Eye Clinics. Operations.

THURSDAY.—11.30 A.M., Dental Clinics. 2.30 to 5 P.M., Medical, Surgical, and Ear, Nose and Throat Clinics. Operations.

FRIDAY.—10.30 A.M., Throat, Nose and Ear Clinics. 2.30 to 5 P.M., Surgical, Medical, and Children's Diseases Clinics. Operations.

PEOPLE'S LEAGUE OF HEALTH.

THURSDAY, Feb. 2nd.—6 P.M. (at the Medical Society's Rooms, 11, Chandos-street, Cavendish-square, W.), Dr. E. D. Macnamara: Primitive Instinct.

ST. PAUL'S HOSPITAL, Endell-street, W.C.

THURSDAY, Feb. 2nd.—4.30 P.M., Mr. Frank Kidd: Some New Devices in Urinary Surgery.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.

TUESDAY, Jan. 31st.—5 P.M., Dr. S. E. Dore: Alopecia.

THURSDAY, Feb. 2nd.—5 P.M., Dr. A. M. H. Gray: Xanthoma. Herpes.

CENTRAL LONDON THROAT, NOSE AND EAR HOSPITAL, Gray's Inn-road, W.C.

MONDAY, Jan. 30th.—1.30 P.M., Mr. R. J. Cann: Examination of the Accessory Sinuses.

WEDNESDAY, Feb. 1st.—1.30 P.M., Mr. N. MacKeith: Examination of the Larynx.

ROYAL NORTHERN HOSPITAL, Holloway-road, N.

TUESDAY, Jan. 31st.—3.15 P.M., Dr. R. Wade: Anæsthesia.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street W.C.

THURSDAY, Feb. 2nd.—4 P.M., Dr. Poynton: Some Features in Respiratory Diseases in Child and Adult.

ROYAL INSTITUTE OF PUBLIC HEALTH, 37, Russell-square, W.C.

WEDNESDAY, Feb. 1st.—4.30 P.M., Dr. Nathan Raw: Medico-Legal Problems of Lunacy.

UNIVERSITY OF SHEFFIELD POST-GRADUATE CLINICS.

FRIDAY, Feb. 3rd.—3.30 P.M., Dr. Barnes: Clinical Cases.

ST. MARY'S HOSPITALS, MANCHESTER (Post-Graduate Lecture).

FRIDAY, Feb. 3rd.—4.30 P.M. (at the Whitworth-street West Branch), Dr. Dougal: Occipito-posterior Positions.

Appointments.

REMMELL, R. W., M.D. Liverp., D.P.H., has been appointed Hon. Radiologist to the David Lewis Northern Hospital, Liverpool.

INGRAM, J. T., M.D., M.R.C.P. Lond., Lecturer in Diseases of the Skin to the University of Leeds.

RADFORD, MAITLAND, M.D., B.S. Lond., D.P.H., Medical Officer of Health for Shoreditch.

STEEL, R., M.B., Ch.B. Glasg., Hon. Radiologist at Southport Infirmary.

Certifying Surgeons under the Factory and Workshop Acts, O'SULLIVAN, A. J., L.A.H. Dub. (Roade District of the County of Northampton); DODGSON, H., M.B., Ch.B. Edin. (Folkestone District of the County of Kent).

Vacancies.

For further information refer to the advertisement columns.

All Saints' Hospital for Genito-Urinary Diseases, 91, Finchley-road, N.W.—Hon. Consulting Phys. and Hon. Surg. Reg.

Bradford County Hospital.—Asst. H.S. At rate of £130.

Brierfield General Hospital.—H.P. £150. Also Hon. Orthopædic S.

Bolingbroke Hospital, Wandsworth Common, S.W.—H.S. At rate of £120.

Bristol, Royal Hospital for Sick Children and Women.—Hon. P. to Out-patients.

Calcutta, Presidency College.—Prof. in Physiology. Rs.800 per month.

Calcutta School of Tropical Medicine.—Research Worker Rs.1750.

Cambridge, Addenbrooke's Hospital.—H.P. At rate of £130.

Cardiff Royal Infirmary.—Hon. Asst. Surg. to Ear, Nose, and Throat Department.

City of London Hospital for Diseases of Heart and Lungs, Victoria Park, E.—H.P. At rate of £100.

City of London Maternity Hospital, City-road, E.C.—Registrar. £100.

Dewsbury and District General Infirmary.—H.S. £200.

Edinburgh, East Fortune Sanatorium.—Asst. M.O. £250.

Elizabeth Garrett Anderson Hospital.—Asst. Radiologist. £100. Also Asst. Pathologist. £150. Both part-time.

Great Yarmouth, General Hospital.—H.S. £150.

Hertford County Hospital.—Hon. Asst. S.

His Majesty's Indian Medical Service.—Appointments.

Hospital for Tropical Diseases, Endsleigh-gardens, W.C.—Hon. Asst. P.

Hospital for Women, Soho-square, W.—Hon. Med. O. to Out-patients.

Hull Royal Infirmary.—Cas. H.S. At rate of £130.

Ilford Emergency Hospital, Essex.—Jun. H.S. £90.

Leicester Royal Infirmary.—Hon. P. and Asst. Hon. P. Asst. Pathologist. £500. Also Cas. H.S. At rate of £125.

Liverpool, City of.—City Coroner. £1000.

London School of Hygiene and Tropical Medicine, 23, Endsleigh-gardens, W.C.—University Chair of Public Health. £1500. Also Research Studentship in Protozoology. £250.

Margate, Princess Mary's Hospital for Children.—Second Asst. M.O. £550.

Middlesbrough County Borough.—Asst. to M.O.H. £450.

Mount Vernon Hospital, 7, Fitzroy-square, W.—Asst. P.

Preston County Borough.—Asst. S.M.O. £600.

Queen Mary's Hospital for the East End, E.—Anæsthetist. 25 guineas.

Royal London Ophthalmic Hospital, City-road, E.C.—Asst. Surg.

St. Mary's Hospital for Women and Children, Plaistow, E.—Res. M.O. and Asst. Res. M.O. At rate of £175 and £130 respectively.

St. Thomas's Hospital.—Phys. in charge of Out-patients.

Sheffield Royal Infirmary.—Hon. Asst. Ophth. S.

Shoreditch, Metropolitan Borough of.—Asst. M.O.H. £650.

Sleaford, Kesteven Mental Hospital.—Asst. M.O. £350.

Smethwick County Borough.—Asst. M.O.H., &c. £600.

Stoke-on-Trent City Maternity Home.—Res. M.O. £450. Also Consulting Officer. £150.

Truro, Royal Cornwall Infirmary.—H.S. £170.

University College Hospital Medical School.—Radcliffe Crocker Travelling Scholarship in Dermatology. £280.

West London Hospital, Hammersmith-road, W.—Hon. Obstet Reg.

West Riding County Council.—School Oculist. £600.

Wolverhampton and Midland Counties Eye Infirmary.—H.S. £200.

The Chief Inspector of Factories announces the following vacant appointments for Certifying Factory Surgeons: Hipperholme (York, West Riding), Cirencester (Gloucestershire), Peasenhall (Suffolk), Pontrhydygroes (Cardiganshire), Chester (Cheshire), Fort William (Inverness-shire), Inverurie (Aberdeenshire), and Uckfield (Sussex).

The Secretary of State for the Home Department gives notice of vacancies for one or more Ophthalmic Specialist Medical Referees under the Workmen's Compensation Act for County Courts in circuits comprising roughly the East Riding of Yorkshire and Lincolnshire. A vacancy is also announced in Circuit No. 55, Bridport, Dorchester, &c. Applications should reach the Private Secretary, Home Office, London, S.W., not later than Feb. 7th and 10th respectively.

Births, Marriages, and Deaths.

BIRTHS.

BILDERBECK.—On Jan. 19th, at a nursing home, Littlehampton, Sussex, the wife of Major Bilderbeck, I.M.S., of a son.

EDWARDS.—On Jan. 22nd, the wife of A. Tudor Edwards, F.R.C.S., of Queen Anne-street, Cavendish-square, of a daughter (stillborn).

JONES.—On Jan. 19th, at Royal Naval Hospital, Haslar, the wife of Surgeon-Commander Lloyd Jones, of a daughter.

MARRIAGES.

CARDELL—CRAIG.—On Jan. 21st, at All Saints Church, Kenley, Surrey, John Douglas Magor Cardell, M.B., B.S., F.R.C.S., to Audrey Winifred, elder daughter of Lieut.-Colonel James Craig, C.B., and Mrs. Craig, The Glen, Kenley, Surrey.

DEATHS.

BROWN.—On Jan. 21st, Lieut.-Colonel R. Tilbury Brown, late R.A.M.C., aged 54.

DUCKWORTH.—On Jan. 20th, at Grosvenor-place, S.W., Sir Dyce Duckworth, Bart., M.D., LL.D., F.R.C.P., aged 87.

HENRY.—On Jan. 16th, at Clones, suddenly, from pneumonia, William Henry, M.B.

LANG.—On Jan. 18th, Basil Thorn Lang, F.R.C.S., Surgeon to the Royal London Ophthalmic Hospital, Moorfields, aged 47 years.

RIDDELL.—On Jan. 19th, very suddenly, Brownlow Riddell, O.B.E., M.D., Newton-place, Glasgow, aged 58 years.

SABERTON.—On Jan. 16th, at Forest-road, Bournemouth Claude William Scott Saberton, M.D., D.M.R.E. Camb.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

A VITA-GLASS PAVILION.

Dr. T. C. Hunter writes to call our attention to a pavilion, the first of its kind he believes, at the Stannington Sanatorium for Consumptive Children, Morpeth, of which he is medical superintendent. Owing to its relative impermeability to ultra-violet rays ordinary glass cannot profitably be used to shelter patients undergoing sun and fresh-air treatment for tuberculosis. With the invention of a glass which has the property of transmitting a considerably greater portion of these rays, hundreds of hours of sunshine can now be utilised which otherwise would be lost owing to the Spartan character of the climate. "I do not know what is the experience of other observers," Dr. Hunter writes, "but in our opinion the artificial rays are not comparable with the natural sunlight for healing purposes and our recoveries are immeasurably quicker and more certain with the latter agent, though we use both extensively. Moreover, a larg proportion of cases can be so treated." The pavilio 70 by 25 feet, is composed entirely of vita-glass exceptir for certain small offices in wooden framework. Ventilatic on boisterous days is provided for by a large lantern whi can be opened along its entire length, north and sout The whole of the southern and half of the northern fro can be opened by means of folding windows on ball bearing which slide along and fold up and back. The buildi was designed to accommodate 50 patients in special reclini chairs such as are extensively used at Swiss health resort By this means the most delicate patients, whose powers resistance are small, can take their light and air with litt

The Stannington Vita-glass Pavilion.

drain on their combustion. "Only those who have soug their cure on draughty balconies and verandahs," I Hunter remarks, "can fully appreciate this boon." T glass costs several times the price of ordinary glass, and t money was given by an anonymous donor for the spec purpose. The reproduced photograph shows the inter of the pavilion with patients undergoing treatment.

A HOSPITAL PHARMACOPŒIA.

THE pharmacopœia of the Great Ormond-street Hospital has a value which extends considerably beyond its primary purpose. The experience that comes of collating results obtained from a large number of cases is here placed at the disposal of practitioners whose observations of children's ailments are relatively few and scattered. Classified formulas occupy hardly more than half the total space of 83 pages; doses of internal medicines have been adjusted to those suitable for children 1 year old, and formulas differing from those with identical titles in the British Pharmacopœia bear an indication of the fact. Diet tables are divided into five age-periods, beginning at six months and ending at seven years; in addition there will be found a milk-water-sugar table for young infants, quantities for a typical week's dinner for children 7 years old, and a list of diet ingredients. The Medical Committee has recently (July 6th, 1927) revised its food recipes, its directions for the care of rickety children, for tending paralysed children, for cleaning the teeth, and so forth; these sections follow the memoranda on diet. Other features include Holt's table of weight, height, and circumference to the twelfth year, quarantine and incubation periods, and lists of thermometric and other equivalents. The book is provided with an index of titles and an index of drugs. The new edition, revised by Mr. J. Wicliffe Peck, F.C.S., is printed for private use under the authority of the Hospital Committee, and copies are obtainable on application to the Secretary of the hospital.

A PLEA FOR A EUGENIC SETTLEMENT.

THE author of a book entitled the Survival of the Unfittest (Charles Wicksteed Armstrong. London: C. W. Daniel Company. Pp. 160. 6s.) is a widely travelled man, who recognises in modern democracy a threat to this country and to the white races. In the competition for votes which is a sine qua non of party Government, in the National Insurance Act, in the "dole," and in indiscrimin charity are seen means by which the unfit are preserv and encouraged to multiply, while the biologically fit handicapped. It is suggested that if the necessary fun can be raised, a eugenic settlement be founded wher only those of established physical and mental excelle be admitted. The author's ideas emerge from a cohere system of social and biological theory, which, wh likely to provoke disagreement, bespeaks original a vigorous thought. The book would be read with pr by those medical men unfamiliar with the aims a principles of eugenics.

CYSTIC PNEUMATOSIS OF THE BOWEL.

F.R.C.S. Edin. writes: "May I call the attention Dr. J. Silverstone, whose paper on cystic pneumatosis the bowel appears in your issue of Jan. 21st, to the f that in addition to the three time-worn and not altogeth satisfactory theories of causation which he mentions th is a third theory—the *chemical*—which has been advanc by Prof. P. Masson, of Strasbourg. This theory has received the attention it deserves in this country. It much more satisfying and logical than any of the th theories Dr. Silverstone, following precent, quotes. T argument will be found in extenso in Ann. d'anat. path et d'anat. normale médico-chirurg., Paris, 1925, ii., 541.

PLASMOCHIN OR PLASMOQUINE.

To the new synthetic remedy for malaria, introduced the Düsseldorf Conference in September, 1926, by P P. Mühlens (Hamburg) and Prof. F. Sioli (Düsseldorf), name of plasmochin was given, and under this name it issued by the Farbenindustrie Leverkusen, who prepare Bayer Products Ltd. have registered the same product this country under the trade-mark "plasmoquine," a they would like us to point out to our readers that plasmoc and plasmoquine are identical.

An Address
ON
SOME PROBLEMS IN THE ÆTIOLOGY OF
CARDIAC FAILURE.

Delivered before the Inter-State Post-Graduate Medical Association at Kansas City, U.S.A., on Oct. 17th, 1927,

BY SIR JOHN F. H. BROADBENT, BART., M.D. OXF., F.R.C.P. LOND.,
PHYSICIAN TO ST. MARY'S HOSPITAL.

HEART failure has been defined as the inability of the heart to discharge efficiently its function of circulating the blood, and the essential cause of heart failure is stated to be some damage to the heart muscle which impairs its efficiency as the propelling and regulating mechanism of the circulation. Though it is true that the functional capacity of the heart depends on the integrity of its musculature, it must also be borne in mind that its efficiency as a pump may be impaired by lesions of the valves and by disorders of rhythm.

In investigating the problems of the ætiology of heart failure all these factors have to be taken into consideration and their relative importance carefully weighed. We must also have in our minds some criterion as to what constitutes heart failure, what are the early symptoms of its onset, what agents are likely to bring it about, and whether it is likely to be a temporary or permanent condition.

All these points are important from the point of view of prognosis, and in heart disease the question of prognosis is of the utmost importance both to physician and patient. The latter will want to know the degree of seriousness of the heart affection, whether he is in danger of sudden death, and what are his prospects in regard to the future; the former will have to decide these points, state what amount of exercise can be taken with safety, and instruct his patient how he should regulate his life to his best possible advantage.

In deciding these important points many factors have to be taken into consideration—first of all, whether the patient has actual heart disease, or whether the symptoms he attributes to heart disease are due to other causes. If they are attributable to some affection of the heart, the physician must decide whether this is a temporary condition, the result of some recent acute illness or toxæmia, or loss of tone from overwork or neurasthenia; or, on the other hand, to organic disease of the heart, either of the valves or myocardium.

Speaking generally, we may classify affections of the heart in three main groups—diseases of the valves, of the myocardium, and disorders of rhythm—but no hard-and-fast line can be drawn, and the condition of the myocardium must always be taken into consideration, since it is the dominating factor in the functional efficiency of the heart. Taking these seriatim, I will deal with valvular disease first, and endeavour to show what part it may play in contributing to heart failure.

VALVULAR DISEASE.

As the result of the establishment of a valvular lesion of any degree of severity, certain changes take place in the walls and cavities of the heart, which represent an attempt on the part of Nature to counteract or compensate for the ill-effects of the lesion. These changes consist of hypertrophy of the walls of one or other of the ventricles, together with dilatation of some of the cavities of the heart, but however efficiently they are carried out as a counteracting measure, the mechanism of the heart as a pump must be seriously impaired and the hydraulics of the circulation in some degree upset.

For instance, in mitral stenosis we have a nozzle gradually decreasing in circumference as time goes on, damming back the circulation in the lungs, and incidentally giving rise to dilatation of the left auricle, with the result that an increasing amount of work is put on the right ventricle, which hypertrophies at first in response, but in the long run gives way under the prolonged and increasing strain. In aortic incompetence the left ventricle dilates and subsequently hypertrophies as a result of the reflux from the aorta, and carries on for a time, but even tually tends to give out from the prolonged effort under a serious mechanical disadvantage. The vascular system also adapts itself to meet the altered requirements of the circulation. Thus in mitral or aortic stenosis we find the vessels, taking the radial artery as an example, contracted down and smaller in calibre in proportion to the degree of stenosis, to adapt themselves to the diminished volume of blood propelled through the narrowed orifice. In aortic incompetence, on the other hand, when we have a dilated and hypertrophied left ventricle pumping an abnormal quantity of blood with increased force into the circulation, we find the arteries enlarged to accommodate the increased volume of blood, and the arterial system relaxed by vasomotor dilatation, so that the peripheral resistance is diminished and the work of the heart proportionately lessened.

From the degree in which these various changes manifest themselves, it is possible to form a fairly accurate estimate of the extent of the valvular lesion, and from the readiness with which symptoms of cardiac distress are induced by exertion one is able to judge as to the efficiency of these changes in compensating for the lesion. It is obvious that a valvular lesion when severe may be an important contributory factor to heart failure.

AFFECTIONS OF THE MYOCARDIUM.

Valvular lesions impair the mechanism of the heart as a pump, but the functional capacity and driving power of the heart, which is the more important consideration, is dependent on the integrity and soundness of the muscular walls, and though it is a comparatively easy matter to estimate the degree of severity of a valvular lesion, it is often very difficult to decide, with any degree of accuracy, as to the extent and nature of the damage in affections of the myocardium.

When essaying the latter task, we must bear in mind what are the essential characteristics of cardiac muscle. These were originally defined by Gaskell as: 1. Contractility. 2. Tonicity. 3. Conductivity. 4. Excitability—i.e., the power of responding to a stimulus, as a result of which contraction takes place. (In this connexion heart muscle has two peculiar properties: when stimulated it contracts to the full extent of its capacity; after contraction there is a refractory period during which it is incapable of responding to a further stimulus till a certain degree of energy has accumulated during diastole.) 5. Stimulus production, or the power of originating a rhythmical stimulus in response to which the heart contracts.

The last three properties are more particularly concerned in disorders of rhythm. The first two, contractility and tonicity, have more especially to be considered in discussing questions as to the functional capacity of the heart and the causes of heart failure. The efficient working of the heart is dependent on the integrity of these two important properties of the heart muscle, and damage to the myocardium may impair one or both of the functions with which they are concerned.

Before we discuss the causes of the impairment of the functional capacity of the heart, and of dilatation in particular, it is necessary to clear the ground by considering what are the effects of severe exertion on a healthy heart. In the well-trained athlete the heart responds to exertion by increased output and increased rate of beat. To supply the increased output it is possible that there is some physiological

increase in the capacity of the cavities of the heart during diastole, so that they accommodate an increased amount of blood. But the heart contracts more strongly, and, what is most important, completely empties itself of blood at each systole. In a short time after the cessation of exertion the pulse-rate settles down to normal. In the unfit or unhealthy individual, when the reserve power of the heart has been diminished by disease or other causes, undue exertion may lead to dilatation, with incomplete emptying of residual blood, and a very rapid pulse-rate which does not readily subside.

In the healthy young adult all the evidence tends to prove that the normal heart does not become dilated, however much its working capacity is taxed by exertion. This is borne out not only by the experience of athletes but by experimental evidence. Some years ago Dr. Balint Rezsoe,[1] of Budapest, carried out a series of experiments to demonstrate this. Healthy young porters were made to wrestle up to exhaustion, with absolutely negative results as regards dilatation. A dog was made to rotate a wheel until completely exhausted, till it finally dropped, but no increase in the size of the heart could be detected. A large number of patients were requested to do certain work up to the limits of their endurance, but no appreciable dilatation occurred. In all these experiments the results were confirmed by accurate measurement of the size of the heart before and after exertion by means of X rays.

The reserve power and functional efficiency of the healthy heart in the young adult thus appear to be almost unlimited. We have now to consider what are the causes which will impair this efficiency. First, I will refer to those which impair the tonicity of the heart muscle and thus bring about dilatation.

Tonicity.

Tonicity is the property which maintains the heart muscle in a state of "tone" or static contraction, so that it does not completely relax during diastole and allow the ventricle to become over-distended, and also keeps it, so to speak, tuned up, so that it is ready at once to contract effectively when the stimulus reaches it. Impairment of this function of tonicity is the main ætiological factor in dilatation of the heart. Dilatation implies the giving way of the walls of the heart, and ventricular dilatation, or the giving way and stretching of the wall of the ventricle is an important ætiological factor in heart failure in a large group of cases. In other words, heart muscle that has lost its tone may be compared to india-rubber or elastic which has more or less perished, so that it is less resilient and gives way under the pressure of the contained blood.

Causes of Impairment of Tonicity.

Bacterial toxins of all kinds impair to a varying degree the tonicity of the heart muscle, notably those of influenza, pneumonia, and typhoid fever, but the most deadly toxin is that met with in the rheumatic heart affections of children, and in rheumatic pericarditis I think all will agree we may see the most extreme degree of cardiac dilatation. The recuperative power of the heart in the young in such cases when failure results from dilatation is very remarkable, as instanced by the wonderful recoveries one sees from rheumatic pericarditis where the dilatation has been extreme. On the other hand, when the dilatation persists, the more especially if the pericardium becomes adherent, we have a fruitful cause of heart failure. The left ventricle hypertrophies to deal with the increased volume of blood it has to propel and with the hampering effects of the adhesions when they are present, and we have a greatly enlarged heart, with mitral incompetence probably present in addition as a result of the dilatation, struggling against almost insuperable obstacles, and however plucky the struggle, it cannot be many years before it breaks down.

[1] Orvosi Havi Ertesito, vol. vii., No. 5.

In Graves's disease there is often marked dilatation of the heart. The cause of this is not altogether clear. The rapid action of the heart must tend to exhaust the cardiac muscle and this may be a contributory cause, but the cardiac dilatation is associated with marked loss of tone of the arterial system, as well as of the myocardium, for both of which it would appear that the excessive thyroid secretion must be responsible. The dilatation may be very great and subside with the recovery from the Graves's disease. I have notes of a case of a lady of 40 suffering from this affection, with great cardiac dilatation, the apex-beat being in the sixth space almost in the anterior axillary line with a loud blowing systolic murmur, and some œdema of the legs. On recovery from the Graves's disease some years later the mitral murmur had disappeared, the apex-beat had come in to the nipple line, and the heart had regained its normal size.

Chronic alcoholism may in course of time be responsible for cardiac dilatation with some degree of mitral incompetence from its deleterious effects on the heart muscle. Various debilitating influences, such as prolonged nervous strain, unhealthy surroundings, poor nutrition, neurasthenia, and over-work may impair the tonicity of the heart muscle and lead to some degree of dilatation. Degenerative disease of the myocardium, fibrosis, and fatty degeneration, the former often the result of cicatricial changes following severe rheumatic carditis, may be a cause of dilatation and heart failure. Syphilis also may damage the vessels or myocardium. In later life we come across some cases of heart failure associated with great dilatation in which no definite cause can be traced for the dilatation or breakdown except perhaps wear and tear.

Diagnosis of Dilatation.

The presence of dilatation may be ascertained by percussion in the majority of cases, especially in the young, but it is not always an easy matter to percuss out the exact outline of an organ situated behind a bony framework and overlapped to a varying degree by lung, and in adults with excess of adipose tissue particularly women, or when emphysematous lung overlapping the heart practically obliterates the dullness, it may be impossible. In such cases the X ray picture may be of great service.

Other indications of dilatation may be: 1. Displacement of the apex-beat with a diffuse and slapping impulse. 2. Alteration in the character of the first sound which tends to lose its low pitch and become short and snappy. 3. The development of a mitral systolic murmur. 4. Acceleration of the pulse-rate.

Impairment of Function.

As has already been stated, a healthy heart contracts strongly with limited diastolic distension, and practically empties itself at each systole. It responds to exertion by increased output and increased rate of beat, and continues to empty itself at each systole. The conditions are materially altered when dilatation is present.

Starling[2] put forward the following explanation of heart failure resulting from impairment of tonicity:—

"When the heart is dilated and its tonicity impaired the diastolic distension may be excessive, and the heart does not completely empty itself at each systole so that there is some residual blood. In response to exertion, it might be expected that there would be some increase in output as a result of the increased capacity of the ventricle and the increased effort made by the heart, but the main result is increase in the residual blood and not in the output. An attempt is made by increase in the rate of beat to supply the increased output called for by exertion. This may to a certain extent suffice for a time, but eventually the heart muscle gives out as a result of working at an excessive speed, and the output becomes insufficient for the needs of the body."

Contractility.

I stated that the efficient working of the heart is dependent on the integrity of its properties of tonicity

[2] Prof. E. H. Starling: THE LANCET, 1921, ii., 1199.

and contractility. I have dealt with tonicity, and we have now to consider how impairment of contractility can be recognised and what are its results. This is not altogether an easy problem. The chief symptom of failure of contractility would appear to be præcordial pain on exertion, and a risk of sudden death, in the absence of any very characteristic physical signs; in other words, the clinical syndrome of what is known as angina pectoris. In support of this Mackenzie[3] states:—

"I have taken a number of tracings from patients who have suffered from angina pectoris during attacks and when free from pain, and analysis of these tracings enables me to say that angina pectoris can occur when the excitability, conductivity, and stimulus-production are unimpaired. There remain the function of tonicity and contractility. The evidence of failure of tonicity is mainly shown by dilatation, and typical attacks of angina may occur when the heart is normal in size. Thus angina may occur when there is no impairment of tonicity."

The logical conclusion is, therefore, that the anginal syndrome is indicative of failure of contractility. Further positive evidence is, Mackenzie states, the fact that angina is sometimes associated with pulsus alternans which he regards as the characteristic sign of depressed contractility. Though criticisms may be brought against it, this conception of failure of contractility is a very helpful and rational one. The præcordial pain which occurs on exertion in angina is a sensory reflex and may be regarded as a warning sent out by the heart that the limit of its reserve has been reached, and that it is unable to cope with the increased demand on its energy entailed by the additional exertion.

It does not fall within the scope of this paper, nor would time allow me to discuss the character of the pain in angina, or the explanation of its distribution according to Head's hypothesis or even the differential diagnosis of præcordial pain. I am aware that there is some controversy as to the origin of the pain and the cause of death in angina, and that Clifford Allbutt put forward the theory that disease of the aorta was responsible for the former, and vagus inhibition from the shock of the severe pain for the latter. It seems, however, incredible that mere pain should cause arrest of the heart's action, unless the myocardium had been damaged and its functional activity seriously impaired by disease or interference with its blood-supply, and even assuming that disease of the aorta was responsible for the pain, of which there is no proof, there is then no apparent reason why exertion should induce an attack of pain. Moreover, extensive disease of the aorta resulting in aneurysm may occur without giving rise to præcordial pain. Many other theories have been put forward to explain the pain in angina, but I submit that the one I have suggested affords a reasonable and satisfactory working hypothesis.

What, then, are the factors which are responsible for heart failure in angina? It is generally admitted that the grave forms of angina are associated with serious pathological changes in the coronary arteries. Osler held this view, and Huchard, the French heart specialist, stated in his book on heart disease: "There are not several varieties of true angina, there is only one, that associated with disease of the coronary arteries." The most serious effect of disease of the coronary arteries is interference with the blood-supply to the heart muscle from thickening of their walls or narrowing of their lumen, of which the most severe degree is met with in syphilitic endarteritis obliterans, or from obstruction of their orifice by syphilitic disease of the aorta.

One can readily understand how the heart, dependent for its very life and ability to function on a free supply of blood through the coronary arteries, may when it is starved of blood by narrowing of their lumen, send up a cry of despair, when called upon for increased effort to which it cannot respond without an increased blood-supply. If the exertion is too severe or is persisted in, the heart comes to a standstill. Analogous to this is the "claudication intermittante" of French authors, first described by Boullay in 1831, sometimes met with in old horses with degenerated thickened vessels through which an adequate supply of blood does not reach the muscles in the legs. When called upon for too severe or too prolonged effort the muscles cannot respond and the animal comes to a standstill.

Narrowing of the lumen of the coronary arteries by endarteritis or obstruction of their orifice by syphilitic aortitis will cause the most severe and grave interference with the blood-supply to the heart muscle, and in less degree thickening of their walls or of the intima from arterio-sclerosis or atheroma and degenerative change will have the same effect. One or other of these changes is commonly found at autopsies on cases of angina pectoris. Many instances, however, occur in which no obvious disease of the coronary arteries is found post mortem in patients who have had during life symptoms indistinguishable from the anginal syndrome—that is, who have suffered from severe præcordial radiating pain on exertion, and have died suddenly. One also frequently meets with cases in which præcordial pain on exertion is a prominent symptom, but who make a good recovery and lose their symptoms. How can we reconcile this with the statements made by Huchard and others that true angina does not occur in the absence of coronary sclerosis?

We must first of all disabuse our minds of the idea that angina pectoris so-called is a disease. The term itself is derived from the Greek word ἀγχόνη, which means literally a strangling or throttling, hence we have the Latin word angina and the English agony. In medical parlance the term angina is employed to denote a syndrome of symptoms, the chief of which is præcordial pain on exertion, which are met with as a result of impairment of function of the heart muscle due to pathological changes. I have already stated that it is impairment of the property of contractility of the heart muscle which appears to be responsible. Contractility is the most vital and essential property which enables the heart to fulfil its function of propelling the blood into the circulation. Obviously if it fails completely, even for a moment, the heart must come to a standstill. The most serious pathological lesions, entailing grave and permanent impairment of contractility, are lesions of the coronary arteries or their orifices interfering with the blood-supply to the heart muscle, and of these syphilitic lesions are the most fatal. It is quite intelligible, however, that causes other than the cutting off of the blood-supply may impair contractility, for instance, fatty or fibroid degeneration of the heart muscle, which when advanced may prove almost as serious, and cases of sudden death are not uncommon with these conditions. On the other hand, there may be minor degrees of impairment of contractility associated with præcordial pain on exertion, due to depressing conditions of a temporary nature from which recovery is possible.

Disorders of Rhythm.

There remains for consideration the part played by disorders of rhythm in precipitating a cardiac breakdown. These may be classified as follows: 1. Impairment of conductivity leading to heart-block of varying degree, exemplified in its most severe form in the Stokes-Adams syndrome. 2. Acceleration of heart-beat, as in auricular flutter and paroxysmal tachycardia. 3. Irregularity in force and frequency of rhythm. (*a*) Sinus arrhythmia; (*b*) extrasystoles; (*c*) auricular fibrillation.

I do not propose to discuss the ætiology of, or the explanations put forward to explain, these various phenomena, but simply refer to the bearing they have on heart failure.

Heart-block.—Minor degrees of heart-block due to a temporary depression of conductivity which may result after some acute infection are not, as a rule, of any serious significance. In the more severe degrees

[3] Sir James Mackenzie: Diseases of the Heart, first edition, p. 40.

of heart-block, due to compression of the conducting fibres in the bundle of His by inflammatory exudate or cicatricial tissue, the prognosis is more serious, for though patients may survive many years with a very low pulse-rate, they are liable to syncopal attacks or some other manifestation of the Stokes-Adams syndrome induced by temporary cerebral anæmia, which may prove fatal.

In *auricular flutter and paroxysmal tachycardia* the attacks are, as a rule, of limited duration, but if very prolonged or very frequent they may exhaust the contractility of the heart muscle and lead to a fatal issue. Sinus arrhythmia and extrasystoles call for no comment, as they are of no serious import in themselves.

Auricular fibrillation occurring in the later stages of valvular disease, more especially in association with mitral stenosis, is stated by some authors to be the determining factor in the final breakdown of the heart. Doubtless it is a serious additional handicap to a heart already labouring under the mechanical disadvantages imposed by the valvular lesion and the changes in its walls and cavities entailed thereby. In the absence of a valvular lesion, however, auricular fibrillation may persist for many years in certain individuals without giving rise to any serious symptoms or even inconvenience. I have watched four cases of this nature for 15 to 20 years, and have been astonished to see how little the patients were incommoded; though electrocardiograms showed typical fibrillation in the two cases, I had the opportunity of obtaining them. Disorders of rhythm are of great interest, and may cause considerable discomfort to the patient, but they do not, I think, in the majority of cases play a predominant part in bringing about heart failure, though in some they may contribute to it.

In conclusion, let me say that in this communication it has been my object to outline a clinical scheme for the investigation of heart failure. When confronted with a case it is not sufficient to make a diagnosis of valvular disease or cardiac dilatation, &c., but we must make some definite idea as to the relative importance of the factors which may contribute to a cardiac breakdown, and as to the part played by any one of them in bringing it about. It is only thus that we can have a satisfactory basis for prognosis, and for formulating an adequate and suitable line of treatment.

A STUDY OF THE INCIDENCE OF THE MINOR PSYCHOSES:

THEIR CLINICAL AND INDUSTRIAL IMPORTANCE.*

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THIS work arose from an inquiry into telegraphists' cramp, undertaken by the Industrial Fatigue Research Board, who, assuming cramp to be a fatigue phenomenon, detailed two of their investigators, Miss May Smith and Mr. Eric Farmer, to conduct the inquiry. These workers found that cramp showed none of the characteristics of fatigue, but presented a medley of symptoms, of which many seemed to rest upon a psychological rather than a physiological basis. I was then given the opportunity of interviewing cramp subjects and a control group of non-cramps in order to find out whether cramp was associated with other symptoms of a recognisably psychoneurotic type. This was found generally to be the case, the other symptoms being often of a degree which would lead to the diagnosis of a severe psychoneurotic state apart from the cramp; they had often preceded by years the onset of cramp.

This result was not unexpected; but it was disconcerting to find that the controls also showed a considerable, though smaller, proportion of men and women suffering from similar symptoms. Was this proportion, like cramp, to be attributed to some feature of the work, or was it a phenomenon common to the general population? In other words, what number of the general population suffer from symptoms of a minor psychosis? (Although custom compels me to use the word *psychoneurosis*, yet its metaphysical implications lead me to prefer *psychosis*, with the prefix *minor* as a distinction between these mental disturbances and others typically leading to certification.)

We next examined 100 learners in the school of telegraphy, all of or about the age of 16. Here we found what was, to us, a surprising number of symptoms, often quite severe. One lad, aged 19, produced the following material:—

"I don't get on any too well. I'm under the impression something is wrong, and that makes it go wrong. I have trouble with V and 4; I want to rush them." Worse when watched. Has feeling of being observed, but "has hardened himself." But cannot buy his own clothes; gets his brother to buy them. Has *sentiment incomplétude*. "I always imagine what would happen in an accident." Has few friends. Has political opinions, but is always trying to convince himself. Few sports; fond of walking alone.

Fifty-four of the group passed my scrutiny as being free from symptoms, 27 showed slight symptoms, whilst in 19 they were classed as severe. This pointed to the conclusion that predisposition played a great part in the development of cramp, and indicated the presence of an unsuspected number of people who, even in youth, could be identified as likely to fall victims to disabling symptoms if placed in circumstances that might stimulate the latent psychosis.

Further to the psychological examination, each subject was tested by means of the McDougall-Schuster dotting machine, the pursuit-meter, and by the piezograph, an instrument devised to record the pressure exercised in using the morse key. The results of these tests showed some correlation with those of the examinations, but the dotting test was finally adopted as an objective check upon the results of the psychological investigation.

The results of the research up to this point are published by H.M. Stationery Office under the title of "A Study of Telegraphists' Cramp." Only a part of them will be dealt with in this paper.

Time Lost through the Minor Psychoses.

It had become clear that disabilities arising from the minor psychoses played a great part in swelling the totals of time lost through illness, whether diagnosed as neurasthenia, nervous breakdown and such like, or under the guise of gastritis, cardiac debility, dysmenorrhœa, or other manifestations of what are properly called neuroses. We now obtained sickness records from various Government departments and private firms, which showed extraordinary diversity between one and another, not only in the gross amount of illness, but in its nature, as indicated by the diagnostic classifications.

TABLE I.—*Establishment F. C.*

Days lost.	Diagnosis.	Days lost.	Diagnosis.
48..	Cold abscess of thigh.	72..	Appendicitis; operation.
48..	Duodenal ulcer; operation	38..	Motor accident.
33..	Appendicitis: operation.	90..	Pulmonary tuberculosis.
126..	Injured in motor accident	108	,, ,,
42..	Influenza.	98..	Renal calculus; operation
30..	,,	222..	Sarcoma of ilium.

Average days sick leave per head per annum is 3·6.

Establishment W. H.

Days lost.	Diagnosis.	Days lost.	Diagnosis.
156..	Influenza and pleurisy.	109..	Cardiac and nervous overstrain.
159..	(In separate periods.) Influenza, influenzal debility, nervous debility, nervous exhaustion, influenza.	92..	(In two periods.) Debility after appendicitis, influenza, lumbago.
124..	Nervous debility.	140..	Rhinitis.
181..	Cough, high blood pressure, bronchial catarrh, and fibrositis.	243..	(In two periods. Pyrexia, hydronephrosis
278..	Dyspepsia and nervous debility.	105..	General debility.
		94..	Debility.
		123..	Nervous breakdown.

Average days sick leave per head per annum: 7·7 for men; 14·1 for women.

[1] A paper read to the Section of Psychiatry of the Royal Society of Medicine.

In Table I. the details are given of cases involving long sick-leave in establishment F. C. for one year and in W. H. for the same period, except that, the latter establishment being the larger, only the first 12 cases are taken.

Establishment B. N. provides a contrast between different years (only selected diagnoses are given; the figures refer to total days lost):—

TABLE II.—*Establishment B. N.*

	1923.	1924.	1925.
Anæmia	257	386½	418
Gastric	476	624	890
Dysmenorrhœa	197½	174	177½
Neurasthenia, nerves, and general debility	1705½	1206	1070½

Average staff is about 960, and 85 per cent. are females.
Days lost per annum: 7·2.

After 1923 the medical staff paid attention to the prevalence of the "neurasthenia" sick-leave, with the result that it diminished, as is shown; but the increase under the heads of "anæmia" and "gastric" left the total practically unaltered.

The local incidence of dysmenorrhœa varies strangely. One large firm, with excellent welfare arrangements and their own medical staff, has a high sickness-rate; in the year 1924 it was 14·41 and 16·48 days per annum for females in the age-groups 18 to 22 and over 22, and of the total days lost by the female staff 14·9 per cent. were due to dysmenorrhœa. Another large firm, a store employing about 1500 hands, has a maximum sick-rate of 2·6 days per annum, and by adding in the time spent resting in their sick-room the proportion from dysmenorrhœa reaches from ½ per cent. to 1 per cent. For purposes of comparison this figure should be doubled, as only half the staff are females. The firms are reasonably comparable with regard to material conditions.

Method of Investigation.

These figures indicate a serious interference with health and efficiency, and Miss Smith and the writer were now enabled to widen their investigations in an effort to ascertain some of the factors concerned in them. Questions calling for answer seemed to be: (1) What proportion of the population suffer from minor psychoses? (2) Do such people tend to enter particular occupations? (3) How far does occupation determine the outbreak of symptoms? The work already done showed that it is possible in an interview of about 20 minutes to find out with reasonable certainty the presence of typical symptoms in subjects who submit themselves voluntarily to such inquiry. With the exception of a few subjects showing, in the presence of symptoms, that mental attitude described by Charcot as "la belle indifférence de l'hystérique," and others—perhaps less than 1 per cent. of the total—who appeared to be on guard against revealing their weaknesses, the subjects gave every assistance. It is still to me a cause of amazement that some of them should pour out to a total stranger a mass of emotionally charged symptoms which have never been previously confessed. Indeed, I was often thanked for listening to them.

My leading questions have settled down into a regular form; it must be borne in mind that offence had to be strictly avoided; a single complaint might have wrecked the inquiry in the particular establishment where it occurred, but apparently harmless questions proved sometimes very searching. "Do you look forward to sticking to this job till you draw your pension at 65?" has one effect when put to a bright young thing of 19, and one quite different when asked of a woman of 35. A question originally used as a conversational gambit, "How do you like the work?" furnished answers that we think will have a statistical correlation with neurotic illness and soon gave us an insight into the state of harmony between the workers and their chiefs. Moreover, when a reasonable harmony existed in an establishment the question often revealed at once the mal-adjusted psychoneurotic.

But the search for symptoms was the chief aim. Anyone unfamiliar with the work might be puzzled if invited to ascertain whether a person is what is popularly called "neurotic," but the simplest method has proved to be direct inquiry. "Do you call yourself a nervous person?" generally brings forth an honest answer, and the subject may at once plunge into an account of his symptoms. If not, I ask first about fear of the dark, whether it existed in childhood, what form it takes, and whether it interferes with behaviour. Uncomfortable sensations of being observed come next; a surprising number of people of both sexes and of all classes declare they are too sensitive to go alone into a restaurant. Inquiry into the *sentiment d'incomplétude* is often the key that unlocks a host of obsessional symptoms. "Does anything in particular make you nervous?" opens up the way to the phobias, though specific forms may be sought. Sports and amusements pick out the socially adjusted, questions about dancing bring out the attitude to the opposite sex, and "Could you tell a lie with a cheerful countenance?" is not a test of morality, but the touchstone for *les scrupuleux* of Janet. Poise and general behaviour are observed, sweating hands and nail-biting are discussed, if noted. The former is often admitted to be a sign of immediate nervousness, and the latter, I have found, often appears long after childhood, at a time of emotional stress, and persists after the period of stress is over.

Some details of general psychological interest came to light, involving day-dreaming, the effect of noise, and the reaction to war experience.

Day-dreams.

Many of our subjects were occupied in routine work, such as entering amounts against names, arranging names under indexes and the like; others were typists, and, of course, we started with telegraphists. A question was framed to elicit how far such workers could divide their attention: "When you are at work do you think of it all the time, or can you let your thoughts go on to other things?" Some unexpected general principles emerged. The well-adjusted worker, as a rule, can carry on whilst his thoughts are elsewhere, even at such work as typing from shorthand notes; but if a difficulty arises, or he makes a mistake, the whole of his attention returns to the work in hand; in such cases the work, as judged by his superiors, is quite satisfactory, and he makes no more than an average number of mistakes. A few of the class without symptoms, generally conforming to Jung's extrovert type, seemed unable to grasp the purport of the question. Whether they never day-dreamed, or whether they lacked enough insight to recognise what they were doing I could never decide; they would sometimes declare that they could not imagine thinking of anything but the immediate work; a woman sewing, for example, would be assumed by such people to think of her sewing and nothing else.

A very different mental attitude is shown by other subjects. One may reply: "Oh, I always have to concentrate on my work or I should make mistakes"; and such an answer is, as events proved, the invariable prelude to the discovery of minor psychotic symptoms either of the anxiety or over-scrupulous type. I have, indeed, come to regard this striving for concentration as itself a psychoneurotic symptom. It is not, as a superficial observer might expect, necessarily correlated with efficient work.

There is a decided reticence, in both sexes, regarding the content of the day-dream. The conditions of the investigation prevented close questioning, but the admission was sometimes obtained that they were "castles in the air" and sometimes a fairy prince came into the story. Exceptional cases occurred in which the subject declared that work was a welcome means of keeping out unpleasant thoughts; this statement opened the way either to an admission of troublesome obsessional thoughts or to the discussion of some serious current stress.

Noise.

Few opportunities were offered of noting the effect of noise, but so far as our studies went, the well-adjusted subject is able to accommodate to noise after a day or two of discomfort; complaints of ill-results from noise came mostly from subjects with definite symptoms. There is a difference between noise made by oneself and that made by others, also between noise that is essentially a part of the work process and noise that is extraneous. Reaction to noise depends upon a mental attitude which regards it as a definite assault upon the subject's right to quiet. Those minor psychotics who have "good days and bad days" naturally suffer more on a bad day, and even some of the healthy class will admit to suffering from noise when they are "out of sorts."

Post-war Cases.

Ten years' experience of the treatment of the minor psychoses following war service has reduced to a commonplace the process of suppression. Every genuine war case—with the exception of a few obsessionals—presents an example of the suppression of emotionally charged war memories, ranging from a mere reluctance to talk about distressing incidents to a gross amnesia. Yet I had an uncomfortable knowledge that control cases had not been investigated, and this work gave me the opportunity of examining men who had passed mentally unscathed through strenuous war experiences. The result is decisive; men with war service who are found free from symptoms, when invited to relate the worst experience they passed through, will after a moment's thought produce such experiences, sometimes with a healthy expression of regret or disgust. Men with well-defined symptoms—whether supposed or not to be suffering from war-strain—display the usual resistances that show themselves in patients under treatment; they claim to have forgotten, or express annoyance at being asked to revive past horrors, or give generalised accounts with no personal or emotional value. The difference between members of the two groups is pathognomonic.

Standards of Assessment.

An early difficulty was the setting up of standards which would be stable and as far as possible independent of personal judgment. There have admittedly been variations in our standards, or, rather, standards have become better defined as the work progressed. At first I divided the subjects into those with and those without symptoms, the symptoms being divided into mild and severe. This was found inadequate, and six assessments were decided upon, ranging from 0 to +5; the standard of the last assessment was that I judged the subject to be in serious need of treatment on account of interference with happiness or efficiency, or both. I also noted, when possible, whether the predominating symptoms were those of hysteria, anxiety, or of an obsessional state. For the moment I only claim descriptive utility for these qualifications.

The presence of an apparently unimportant symptom—nail-biting, for example, or fear of the dark—did not at first exclude a subject from the 0 class, but cases occurred in which a symptom of that nature proved to be, as it were, at the peak of a symptom complex that almost escaped detection; hence any symptom whatever now places the subject at least in the +1 class. Whether that is justified may be debated, and for present purposes the 0 class and the +1 class may be added together for purposes of comparison between different groups. We regret that inexperience allowed us to be satisfied with a less detailed classification in our original Post Office work.

The placing of subjects in the other groups cannot be reduced to a system; it depends upon a weighing-up of all the symptoms and such impressions as are received during the interview.

Those cases, less than 1 per cent. of the total, in which I suspected that the subject was on the defensive, have been omitted from our figures, but it is significant that they nearly all came very badly through the dotting test. One subject presented such a curious mental picture that I could not decide whether he was an unrecognised genius or a mattoid. Two cases of mild recurrent melancholia—called neurasthenia—were detected and are omitted; also a mentally defective girl earning her living in a laundry, one probable dementia præcox, a woman of 35, who gave me an impression that she was hiding symptoms of a major psychosis, and a man whose case is of sufficient interest to be related now.

A lorry driver, aged 20. (Asked about day-dreams)—Sometimes has horrible thoughts; "fed up" with himself; suicidal thoughts. (Asked about feeling of being observed)—"Everybody's looking at me; sometimes I glance back and see them talking." (Do you worry about what others think of you?)—"They talk of me behind my back." "Mother is an invalid—in terrible agony; her illness started like mine—she told me so. Hers was hurried on through hard work, and the foreman says I'm not strong enough for the job. I get pains in my stomach and go dozy and sleepy." Admits he has had two or three mishaps when driving. Wears glasses for headache (+1·5 cyl.). Dotting score, 130.

This patient should be compared with another lorry driver, aged 25, in the same employment. He has never had a mishap in seven to eight years of driving. Has no symptoms whatever, but was operated upon for squint. Wears +2·25 cylinder in front of his good eye and, to rough tests, has no stereoscopic vision. Dotting score: 216.

The Dotting Test.

The McDougall-Schuster dotting machine consists of a revolving disc—like a gramophone disc—on which is fixed a paper bearing a spiral of small circles, at each of which the subject is instructed to aim with a stylograph, as they come into view through a slot in the cover. Since the spiral begins near the centre of the disc, it follows that the dots pass more and more rapidly in and out of view, and at last their speed is so great that few people succeed in hitting more than a small proportion in the last few sectors. What particular qualities are tested by the machine need not concern us now; the immediate interest is in the fact that Miss May Smith, working independently with it, obtains results that show a definite relation, in every group tested, with the results of my own personal interviews. Each group must be taken by itself, for in such a test workers with a flat-iron cannot be judged by the same standards as workers with a pen; in fact, their results are consistently lower. But in every occupation group those with a high assessment put up on the average a worse performance than the "noughts" and "plus ones." It is only an average, however. We do not claim that in individual cases it has any diagnostic value, except in a small group to be discussed later; but it confirms the significance of my own findings.

Miss Smith analyses the results in various ways, but for comparison I shall consider only the number of hits before breaking-point is reached—that is, before the subject misses as many as five dots in immediate succession.

Correlation of the Dotting Test with Psychological Findings.

Table III. shows dotting results grouped into four classes of descending merit, with a cross classification according to the presence of symptoms. The subjects were learners in the school of telegraphy; those with severe symptoms obtained no first places, 26 per cent. of them being placed in the lowest class. (It is noteworthy that 4·9 per cent. of cramp subjects reach the A class in dotting, thus showing the anomalous nature of the disorder).

The next table (IV.) shows the same and other groups with the mean of the number of hits. The figures headed "V" show the variability within each group, which increases with the severity of the symptoms, except in the case of the non-cramp controls; this indicates that among the severe cases, although the mean is low, yet some members of the group put

up very good records. It will be seen later that a very important reason is offered for this phenomenon, but the absence of variability in the non-cramp controls needs explanation. I believe it is due to my inexperience. They were my first essay in this investigation, and I believe that I missed symptoms which I should now expect to find; so that some of the good performers in the 0 class should be in the other.

Meanwhile, without spending time upon more figures, I will ask you to accept the statement that the correlation between the results of the two methods of examination is constant in all the groups examined.

TABLE III.

Psychoneurotic symptoms.		Dotting. A	B	C	D
None (54)	Number	5	19	26	4
	Per cent.	9	35	48	7
Slight (27)	Number	4	14	5	4
	Per cent.	15	52	18	15
Severe (19)	Number	0	7	7	5
	Per cent.	—	37	37	26

Types Recognised at the Personal Interview.

A pure conversion hysteria was rarely met, though some cramp cases seemed to conform to that type. A hysterical stigma that I frequently "suggested" in my work with war cases is the yielding grip shown when the subject is invited to resist the attempt to pull open the fingers of his clenched hand. This was often seen in cramp cases and I have seen it in three other subjects of this inquiry, always associated with further symptoms of hysteria. Here is one example:—

Female, clerical worker, aged 32. Suffers from rheumatism and headaches. Used to be nervous till the age of 19; had fear of the dark and terrifying dreams. Appendicectomy at 27 after 18 months' pain. Periods ceased for 11 months, then became excessive till hysterectomy was done for fibroids. She gave up nursing because her heart was wrong. Often has heart attacks at work. One lung is also wrong. Wears glasses for headaches. Yielding grip with either hand.

The characteristics of this case are total absence of anxiety in the presence of anomalous physical complaints, and the pathognomonic sign of the yielding grip.

The following is an example of what I call anxiety with hysteria:—

Female, clerk, aged 33. Dislikes the work. Can day-dream without interference with her work. A month ago was away for "nerves." Had made a mistake and it worried her. Always had fear of the dark or of being alone. Nervous if spoken to by strangers. Cinemas try her eyes. Has good and bad days. No energy; improves as the day goes on; has a feeling of "something awful going to happen—a cloud." Tennis is too much for her; influenza left her heart weak. (Asked how that showed itself.) Goes faint in trains and crowds. Could not sit in a small room like this; would make her come over all faint; no, not frightened at all; it's the heart. Wears glasses (+0·25 cylinders) to avoid strain and headache. Had all her teeth out for gastritis before age of 21. Hands are blue. Does not look forward to staying on for her pension. Talks frankly about shortage of men, but declares indifference. Grip good. Assessed at +5. Dotting score, 162.

I do not attempt to define hysteria, but in this case there are frank anxiety symptoms and the readiness of the patient to ascribe her troubles to heart, teeth, and eyes, influences me in adding the diagnostic qualification of hysteria.

The next case is similar clinically:—

Laundry worker, female, aged 34, married, four children. Likes the work very much. Would not change it if given the chance. "My nerves are all bad. The least worry makes me go all of a shake. I worry at the least thing. I'm afraid in the dark or of being alone. Wouldn't go along a dark road." Describes claustrophobia. "Should worry and fidget in this room. Never go in a 'bus; wouldn't go alone in a train; feeling of being observed; never go out by myself." She has to find a companion to accompany her to work. A summons to see her manager would make her go all hot. "All of us have been born with nervous debility." Never goes to the pictures. Is asocial. She has a yielding grip, which she ascribes to rheumatism. Assessed at +4. Dotting, 87.

The interest of this case is in the fact that a woman with these symptoms is able to carry on as a laundry hand without being affected in her work, and without any excess of sick-leave. She looked fairly placid, was rather fat and flabby, and gave no external indication of her minor psychosis.

The next case is one of pure anxiety in a good type of man successfully holding a responsible position.

TABLE IV.—*Dotting Records and Mental Type.*

Psychoneurotic symptoms.	100 learners. Mean.	V.	100 clerical workers. Mean.	V.	Telegraphists: 46 non-cramp subjects and 41 cramp subjects. Mean.	V.
None	171 ± 3·7	24·4 ± 1·64	183·6 ± 3·68	21·9 ± 1·49	176 ± 5·31	23·7
Slight	170 ± 6·1	27·9 ± 2·71	183·0 ± 5·8	21·1 ± 2·34	—	—
Severe	145 ± 7·2	30·6 ± 3·8	170·6 ± 5·5	24·7 ± 2·39	148 ± 5·8	22·6
(Cramp subjects)	—	—	—	—	101 ± 6·8	64 ± 6·48

Aged 37. Likes his work. Would not do work at which divided attention is possible. (This attitude, judged in the light of his symptoms, may represent a desire to keep busy in order to drive away his anxiety.) Is highly strung. Wakes up and thinks of his work. Tended to stammer after the war. Speaks slowly now as a result. Was afraid of the dark after the war. Hates social activity: dances and such-like. Gets frightened at a tea-table. Has now got over the inordinate dread he had after the war. Describes claustrophobia. Hates theatres. Is able to lecture in spite of his fears. Hopes he could tell a lie if he wanted (absence of obsessional over-scrupulousness). Has experienced the *sentiment d'incomplétude*, but can "let it rip." Questioned about his worst war experience, he says it is hard to say what it was, then makes a joke about blood and entrails with no emotion whatever. Assessed at +3. Dotting score, 62 (a very bad record).

This man is kept from a breakdown by his keen interest in his work; if some added stress led to a breakdown, it would be regarded as a bolt from the blue if his previous condition was not ascertained.

The Obsessional Subject as Revealed by the Dotting Test.

The correlation between the two methods of examination was occasionally disturbed by a subject with a high assessment doing an exceptionally good performance at the dotting. One day my colleague put before me my notes on half a dozen cases and asked what was common to them all; I answered that they were all "obsessionals" and was told that these were the people who blurred our statistics by their excellent dotting. Here is an example:—

Male, aged 43, doing responsible clerical work. Work is a bit monotonous. Can day-dream without interference with work. Can cast up a column and talk. Writes music and harmonises for fun. Gets a physical sensation from music, but analyses and criticises. (Are you nervous?) "That's a funny question. I get agitated at music or chess." Prefers the dark. Easily gets fidgety and impatient. Strong *sentiment d'incomplétude* since boyhood. Tells a story of a fear that made him always rush past a lavatory. Has a dread of fire. Had to give up chess because of an obsession to arrange everyone in the street in accordance with the knight's or bishop's move. Assessed at +3. Dotting, 322. The best we have seen.

Note the almost entire absence of anxiety as contrasted to the case previously described; note also

the difference in the dotting score in two men, both of whom are well educated and efficient at their tasks. This latter case admittedly shows few symptoms—they are curiosities rather than disabilities—but enough to place him in his group and account for the extraordinary dotting.

The next subject is more likely to come to disaster through her symptoms, which are, I think, ominous in one of her age.

Female, aged 19½, art student. Can draw and be read to; if not read to she has to make up stories. Is very nervous. Has terror of fire—no reason for it. Will not sleep high up in a house. Gets up and goes round the house, and whilst doing so argues the pros and cons. Terrified at thunder or loud organ. No fear of dark but of midday blight (i.e., overhead fog); hates the orange colour. Has feeling of being observed, but ascribes it to her height; to counteract the feeling she has "created an atmosphere of being fast." *Sentiment d'incomplétude* every night of late. Hands shook and she had fear of traffic after an operation. (What operation?) "My inside had slipped." "I dissect my actions and then dissect the dissection. A vicious circle till I nearly go mad. I try; and can't stop. This started at the age of 15. I have nonsense dreams of fire and being chased by bulls. I am social or unsocial in moods and think of marriage in moods." Describes hypnagogic hallucinations. Assessed at +4. Dotting, 236.

Here the fears are quite specific, only appearing in special circumstances and therefore not likely to interfere with the dotting; the main symptoms are obsessional.

Since this behaviour of the obsessional subject was noted Miss Smith has written on every exceptionally good record—before I examine the subject—the words "obsessional or normal," and so far every one so noted has been obsessional. But it does not follow that every obsessional makes a good score. The worst score, apart from cramp subjects, was made by a "plus 5" obsessional who was in a state of severe secondary anxiety.

Table V. shows the mean of the dotting performance of three groups:—

TABLE V.

Diagnosis.	No. of cases.	Mean of the dotting test.
O	250	164 ± 2·0
Obsessional	38	201 ± 5·5
Hysteria or anxiety ..	105	142 ± 3·1

The figures after those expressing the mean show the probable error, calculated statistically. The most important observation is that all exceptionally good records are made by obsessional subjects.

Results of Investigation of Different Industrial Groups.

In Table VI. the percentages are based upon the examination of not less than 100 subjects in each group:—

TABLE VI.—*Percentage Distribution of Assessments in Different Groups.*

—	Clerical work.		Routine clerical.		Laundry.	Art school.	Telegraph learners
	A	B	C	D	E	F	G
0	60	46·4	52	49	43	32	54
+1	19	22	20	21	25	26·8	27
+2	18	20	11	17	12	16	13
+3	3	9·3	10	8	15	14·4	5
+4	0	2	6	3	5	9	0
+5	0	0	1	2	0	1·8	1

Group A represents establishment F. C., whose sickness records I detailed early in this paper. Those records showed an absence of psychoneurotic illness, and this is associated with a high percentage of the first two assessments and an absence of any assessments in the last two groups. But this is not the whole of the information available, for we know that special circumstances directed the attention of the medical staff to the importance of studying the temperamental qualities of their employees, and there had been a definite attempt to exclude people judged temperamentally unfit. The results seem to have been the exclusion of hysterics and of some anxiety subjects, but probably a selection of obsessionals, who are by no means to be rejected on grounds of inefficiency. The firm has a high percentage of employees (84 per cent.) who say they are satisfied with their job.

Group B has not been subject to this selection, and only 62 per cent. are satisfied. Their sickness-rates, however, show no excess of psychoneurotic troubles.

Groups C and D are very similar. There is a considerable amount of psychoneurotic illness, and only 58·4 and 64·3 per cent. are satisfied with their jobs.

Group E produced results that surprised us. We knew that psychoneurotic illness was non-existent therein, and we expected to find a totally different incidence of latent minor psychoses. Yet our findings gave results practically identical with those obtained from clerical workers. (The first two assessments should be added together to give a fair comparison; a change in the standard of assessment has increased the +1 class at the expense of the noughts.) Contentment with the work seems to be a characteristic of this laundry—which is managed on enlightened lines—and it was rare to find a worker who could be persuaded to express a wish to change into any other occupation.

Group F gave us an insight into what is described as the artistic temperament. All its members were in fairly comfortable financial circumstances, and all were in an occupation which they had selected in accordance with their own desires. No illness records were kept, but absence was negligible. The high assessments were largely due to the presence of obsessional subjects.

Group G suggests that symptoms are absent or less easily detected in some young people who will probably show symptoms at a later period. It shows, however, that symptoms are present at an early age and can be detected.

Among the laundry workers are a fair number of girls between 14 and 15 years of age. Although symptoms in them are not well defined, yet types can be recognised and the assessments are confirmed by the dotting test.

Early in our work we found there was no significant statistical difference between the results in the two sexes, and therefore no attempt has been made to keep the figures separate.

General Conclusions.

The dotting test keeps a check upon the results of the psychological examination.

There is a high proportion of people in the general population suffering in varying degrees from the minor psychoses. These may not affect sick-rates in some occupations, but in others may be the cause of considerable loss of time through illness.

There is no reason to believe that there is any active selection of particular occupations by psychoneurotic people, except in the case of art students, where the results of the investigation confirm popular belief about the "artistic temperament."

The results suggest that the commonly supposed "causes" of psychoneurotic illness are merely factors in exacerbating a previously existing condition. Yet the fact that such illness is absent in some groups indicates the importance of studying exacerbating factors that must be present in those groups with high sick-rate.

MIDDLESEX HOSPITAL.—The sum of £1000 has been contributed towards the hospital's rebuilding and development fund by Mrs. Bethell "as a token of her great esteem and affection for Sir Rowland and Lady Blades." Sir Rowland Blades was Lord Mayor of London last year.

TUMOURS OF THE SPINAL CORD.

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Spinal cord tumours are perhaps most often recognised in special neurological clinics where all kinds of nerve cases are sent. Hence it is not without interest that all the six cases here recorded appeared in the general wards of this medical unit within the space of one year. The majority, in fact, occurred within a period of a few months. There were five males and one female. Their ages were: males, 16, 27, 50, 51, 54; female, 16. There was no occupational incidence. Only one case (Case 1) dated the onset of his symptoms from an accident—a severe bruise over the great trochanter four years previously. Another (Case 5) slipped and fell while lifting a heavy weight, but this occurred six weeks after he had first noticed symptoms. None of the others had received any injury whatsoever. It must be remembered that at the onset the symptoms may be slight, and any interference with walking may be easily overlooked until, perhaps, one day the patient stumbles at his work, and from this time he becomes aware of some difficulty in walking. If he were doing anything particular at this time—e.g., lifting a heavy weight—he may be led to believe that it was this that caused him to stumble and so was responsible for his present condition.

Four of the cases suffered from "girdle" pain, and in three of these it was associated with an encircling band of cutaneous hyperæsthesia. One of the cases, with no complaint of "girdle" pain, exhibited an encircling band of cutaneous hyperæsthesia, and only one case (Case 2) had neither "girdle" pain nor hyperæsthetic band.

The earliest symptoms were usually weakness or heaviness and stiffness in the legs—usually one leg first—and consequent difficulty in walking. One patient, however (Case 2), had complained of "neuritis" (pain) in feet and legs for nine and a half years before the onset of weakness in the leg. Another (Case 3) complained of the "girdle" pain—"like the pain of toothache"—shortly before the onset of a slight "limp."

The spinal level diagnosis arrived at from a study of the physical signs was confirmed in all cases before operation by lipiodol injection into the spinal canal through the cisterna magna. The injection was made with the patient sitting with his head flexed and chin resting on his chest, novocain being used as a local anæsthetic. The cisterna magna was punctured with a lumbar puncture needle, 5 c.cm. of cerebro-spinal fluid drawn into a syringe, 1·5 c.cm. of lipiodol injected, and 2 c.cm. of the cerebro-spinal fluid then replaced. The spine was X rayed throughout immediately after the introduction of the lipiodol, six hours later, and again 24 hours after the injection.

In Case 2 the normal lumbar curve of the spine was rather straightened, and X ray examination showed some slight lipping of several vertebræ—early spondylitis deformans. In Case 3 there was a slight dorso-lumbar scoliosis with the curve convex towards the left; in all probability, however, this was due to considerable cicatrisation in the right lumbar region resulting from a severe scald in early childhood. In none of the other cases, however, was there any obvious spinal deformity, and X ray examination proved negative.

Slight tenderness on pressure over fifth and sixth dorsal spines was elicited in Case 3, and over eighth and ninth dorsal in Case 6, but no spinal tenderness was discovered in any of the other cases.

The Wassermann reaction in blood and cerebro-spinal fluid of all cases was negative.

The cerebro-spinal fluid, as obtained by lumbar puncture, showed no increased tension and no increase of cells. In Case 2 the protein content was normal, but in all the other cases there was an excess of globulin and a trace of albumin. The fluid showed xanthochromia in Cases 1 and 3 only.

Pathology of the Tumours.

In two cases the tumours were within the substance of the cord—intramedullary—and could not be removed (Cases 4 and 6). Posterior longitudinal chordotomy was done in one of these (Case 6) and the dura left open, but in the other (Case 4) it was not considered advisable, after opening the spinal canal, to incise the cord at that particular stage. Decompression of the cord can be done at a later date when further indications for such procedure arise. In another (Case 5) the growth had originated within the cord, and burst through its posterior aspect and spread within the meninges (intra- and extra-medullary); it was partially removed and the dura left open. The remaining three were found within and growing from the meninges, compressing but not infiltrating the cord—extramedullary—and they were successfully and completely removed. Of the latter, one (Case 3) was a lobulated mass about 1½ in. long, one (Case 1) was about the size of a broad bean, and the third (Case 2) a trifle smaller. In the intramedullary cases the site of the tumour was revealed at operation by a localised bulging of the cord.

The three extramedullary tumours were endotheliomatous, containing psammoma bodies, whereas that which was both intra- and extra-medullary—having burst through from within the cord—appeared to be gliosarcomatous. The pathological nature of the two intramedullary growths, of course, was not determined.

Their Clinical Features.

The principal clinical features of the cases are briefly summarised below. The signs are those present when the patients came under our observation.

Case 1.—Male, aged 27. Four years' duration.

Symptoms.—Gradually increasing difficulty in walking. Feeling of heaviness in, with inclination to drag, the right leg, followed by increasing stiffness. Left leg became similarly affected two years later. Painful flexor spasms in legs began to occur and a burning sensation developed in the form of a band around the waist. One and a half years after this incontinence of urine and fæces set in and three months later the spasticity in the legs had developed to such a degree that he was quite unable to move them.

Signs.—Marked spastic paraplegia. Quite unable to move legs and unable to stand—legs collapsing under him. No gross atrophy. Sensibility to light touch impaired throughout lower limbs and trunk up to level of umbilicus. Band of cutaneous hyperæsthesia immediately above this. Pain and thermal sensibilities unaffected.

Reflexes: Knee- and ankle-jerks greatly exaggerated on both sides with patellar and ankle-clonus. Plantars both extensor. Abdominals: Upper, normal; lower, absent.

Spinal level diagnosis: Tenth thoracic segment.

Lipiodol injection: Lipiodol held up completely as an opaque pear-shaped blob with its base at the level of the disc between the seventh and eighth thoracic vertebral bodies. No change after 24 hours, indicating complete blockage of the intrathecal space.

Case 2.—Male, aged 51. ? Ten years' (or six months') duration.

Symptoms.—Pain in feet and legs—"neuritis of feet"—for ten years, with occasional "giving way" of right leg under him. Nothing more until nine and a half years later—i.e., six months before coming under our observation, when increasing weakness and stiffness began to affect first his right leg and, a month later, his left leg. In another three weeks painful flexor spasms in the legs began to occur, and increased in severity until eventually he was quite unable to straighten his legs. No incontinence or "girdle" pain had developed.

Signs.—Marked spastic paraplegia—flexion spasticity of both legs which was never completely relaxed, but often increased spasmodically and gave rise to much pain. Patient lay curled up in bed. Lower half of abdomen and, at times, upper half were rigid. No muscular atrophy. Some alteration of thermal sensibility throughout lower limbs and trunk up to one inch below umbilicus. Immediately below this level there was a narrow girdle-like band of impaired

tactile sensibility, but elsewhere touch was unaffected. There were no other sensory changes anywhere.

Reflexes: Knee-jerks present, but difficult to elicit, on account of extreme spasticity. Ankle-jerks much exaggerated and associated with clonus on both sides. Both plantars extensor. Abdominals could not be evoked because of the spastic condition of abdominal wall.

Spinal level diagnosis: Tenth thoracic segment.

Lipiodol injection: Lipiodol held up completely in the form of two opaque blobs at the level of the intervertebral disc between seventh and eighth thoracic vertebræ. Twenty-four hours later, however, most of the lipiodol had passed right down to the lower end of the theca indicating an incomplete "spinal block."

CASE 3.—Female, aged 16. Two and a quarter years' duration.

Symptoms.—Persistent pain in right side, at level of costal margin, extending across abdomen towards umbilicus and, later, right round body. Onset of "girdle" pain was followed by slight difficulty in walking—she developed a "slight limp"—which became more pronounced, and gradually the legs became stiff. About two years after onset "tingling" in feet began to trouble her, and then "loss of feeling" in feet and legs gradually became more marked. Urinary and fæcal incontinence developed later after admission to hospital.

Signs.—Complete spastic paraplegia; both legs rigid and extended. Right rather more affected than left. Patient poorly nourished and thin generally. Band of tactile hyperæsthesia, about two inches wide, encircled the trunk at the level of the umbilicus, while immediately below this there was another encircling band, 3½ in. wide, where sensation was impaired. Below this level there was complete anæsthesia to all forms of sensation.

Reflexes: Knee- and ankle-jerks exaggerated on both sides, and well-marked ankle-clonus obtained. Oppenheim's and Gordon's reflexes easily elicited. Upper abdominals present, lower absent.

Spinal level diagnosis: Tenth thoracic segment.

Lipiodol injection: Lipiodol held up in the form of a long tubular opacity with its lower limit at the intervertebral disc between eighth and ninth thoracic vertebræ. Practically no change after 24 hours, indicating complete "spinal block."

CASE 4.—Male, aged 54. 18 months' duration.

Symptoms.—Persistent "burning" pain in left heel and ankle, gradually extending up leg to lumbar region. Six months later weakness and stiffness in legs—particularly the right—with consequent difficulty in walking, set in, and at the same time he experienced numbness and loss of sensation in the right leg from knee downwards. The latter, however, only lasted for three months and was succeeded by a "girdle" sensation—as if being "tied round the waist." Next, painful cramps in feet and legs troubled him, and sometimes flexor spasms of right leg. Eventually urgency of micturition and defæcation developed.

Signs.—Very slight unsteadiness in gait due to slight spasticity in right leg. Occasional flexor spasms of legs on moving feet in bed. No muscular atrophy. Sensibility to light touch impaired throughout left leg and left side of trunk up to a line midway between pubis and umbilicus. Immediately above this line a band of hyperæsthesia to light touch completely encircled the body, and immediately below it a narrow band of hyperæsthesia to pain extended across the abdomen. Below the latter band on the left side sensibility to pain was slightly diminished all down the left leg. On the left side, from immediately above the level of the umbilicus downwards along the left thigh to about three inches below the level of the perineum, finer differences of temperature (epicritic) could not be appreciated, but wider ranges could. Left leg showed diminished sensibility to deep pressure and diminished vibration sense. Vibration sense was also diminished over vertebral spines below first lumbar.

Reflexes: Right knee-jerk exaggerated. Both plantars extensor—slight on left, but very marked on right and associated with active withdrawal of foot. Oppenheim's reflex present on right side only. Abdominals absent.

Spinal level diagnosis: Ninth thoracic segment.

Lipiodol injection: The bulk of the lipiodol was held up at the level of the intervertebral disc between the fifth and sixth thoracic vertebræ. A small quantity, however, passed down to the lower limit of the meninges, leaving a few droplets at intervals on the way down. Twenty-four hours later the appearances were practically the same. A partial "spinal block" was thus indicated.

CASE 5.—Male, aged 50. Twenty-one months' duration.

Symptoms.—Weakness and stiffness, of gradual onset, in right leg, associated with band-like feeling around waist, and followed two months later by similar affection of left leg. Both legs eventually became quite spastic, with calf muscles contracted and feet and toes pointing down, particularly on right side. Abdomen became rigid and he was scarcely able to move about at all. His hands became involved 15 months after onset; his grip became weak, the right first and more markedly affected. Eighteen months after onset he found he "had no feeling" from lower part of chest downwards, and there was a tendency to tonic flexion of both elbows and the fingers of ulnar side of each hand.

Signs: Complete and marked spastic paraplegia. Only able to move toes of left foot slightly and bend left knee. Any attempt at voluntary movement set up increased muscular spasm in legs. Spasms often occurred involuntarily also. Both arms rigid, especially left, with flexor contractions of elbows, wrists, and fingers of both sides. Unable to feed himself. Atrophy of first dorsal interosseus muscles of both hands, and, to a lesser extent, of other dorsal interossei of right. No gross atrophy elsewhere. Almost complete anæsthesia to touch (epicritic) in both legs and trunk up to a line encircling chest about 1½ in. above nipples and crossing second dorsal spine behind, and involving also the second dorsal area on the inside of each upper arm. Complete anæsthesia to pain (pin-prick) throughout left leg and left half of trunk corresponding to the limit of tactile anæsthesia. Over the corresponding area on the right side sensibility to pain was diminished, not absent. Complete loss of temperature sense throughout both legs and trunk corresponding to the area of tactile loss. Vibration sense absent in left leg up to knee, and in right up to junction of middle and upper thirds of tibia. No band of hyperæsthesia.

Reflexes: Knee-jerks greatly exaggerated—particularly the right—and well-marked patellar clonus. Ankle-jerks exaggerated, with well-marked clonus. Both plantars extensor and associated with active withdrawal of legs. Abdominals could not be elicited on account of abdominal rigidity. Supinator jerks active and equal. Biceps and triceps absent. Jaw-jerk absent.

Spinal level diagnosis: Below fifth, but involving seventh and eighth cervical and first dorsal segments.

Lipiodol injection: Most of the lipiodol was arrested at the level of the intervertebral disc between fourth and fifth cervical vertebræ, with three or four small drops lower down in the cervical region. Twenty-four hours later, except for a minute drop at the lower limit of the canal, there was no change, indicating a practically complete "spinal block."

CASE 6.—Male, aged 16. Sixteen months' duration.

Symptoms.—Stiffness, heaviness, and loss of feeling in left leg of sudden onset. Unable to stand. Improved, and after two months was able to walk about with aid of a stick. Two months later could walk unaided—only a slight "limp"—but had occasional flexor spasms of left leg. Came under our care five months after onset.

Signs.—Very slight spasticity of left leg. No atrophy. Band of hyperæsthesia to touch, 2½ in. wide, encircling body at level of eighth, ninth, and tenth dorsal spines behind and passing downwards and forwards across the umbilicus, more marked on left side. Sensibility to touch and pain slightly diminished throughout left leg, and just below left knee thermal sensibility was disturbed over a small area.

Reflexes: Knee-jerks—left exaggerated, right not exaggerated. Patellar clonus on left side, no ankle-clonus. Plantars—left extensor, right flexor at first, but later became extensor. Lower abdominals less brisk than upper.

Operation was advised, but strenuously refused by patient's mother, and he was removed from the hospital. He remained very well and even resumed work, but 11 months later he again suddenly lost the power in both legs and developed incontinence of fæces and retention of urine with overflow. Five days later he was sent into the wards, and the following condition was found.

Signs.—Complete paraplegia, with spasticity more marked in left leg. Occasional involuntary flexor spasms of left leg. Sensibility to light touch (brush) absent throughout right leg up to level of great trochanter and in left up to a line just below this. From these levels up to a line midway between umbilicus and ensiform, and passing across eighth dorsal spine behind, appreciation of light touch diminished. Thermal sensibility lost in both legs and impaired above over an approximately corresponding area. Appreciation of pain (pin-prick) absent in legs, and diminished above up to about one inch below the umbilicus. Vibration sense absent in both legs.

Reflexes: Knee-jerks—left exaggerated (with patellar clonus), right present, not exaggerated. Both plantars extensor. Upper abdominals present, lower absent.

Spinal level diagnosis: Probably first lumbar segment with some extention or pressure effect upwards to the ninth thoracic.

Lipiodol injection: Lipiodol held up completely in the form of two opaque lateral columns diverging below—their lower ends being at the intervertebral disc between the tenth and eleventh thoracic vertebræ. Twenty-four hours later the lower half of the right column of lipiodol had remained in situ, but its upper half, together with that of

the left side of the cord, had passed downwards to the cul-de-sac at the lower end of the meninges, leaving a few irregular blobs scattered throughout the canal along its tract of descent. A partial "spinal block" was thus indicated.

Commentary.

Cases 1 and 2 were operated upon under intratracheal ether, the remaining four under nitrous oxide and oxygen. The latter method was adopted because Case 2 succumbed to widespread purulent bronchitis 10 days after operation. The remaining five all made good recoveries and left hospital much improved.

In performing the laminectomy a longitudinal incision was used in all cases, its centre being made to correspond with the spinal level diagnosis. In one case three laminæ were raised, in another five, and in the remainder four. Before removing the laminæ the soft parts were protected by rubber sheets, and at intervals throughout the operation a stream of warm saline was used to irrigate the wound. Fine silk sling sutures having been passed through the dura, the latter was opened longitudinally. In those cases (1, 2, and 3) from which the tumours were removed, and also in Case 4 (a small intramedullary tumour) the dura was subsequently closed with fine cat-gut, but in Cases 5 and 6 it was left open to permit of greater decompression. In Case 3 three posterior roots had to be cut before the tumour could be removed.

Cases 1 and 2 were nursed lying on their backs after operation, but the others were kept prone for about a fortnight to avoid pressure on the wound. In order to accustom the patients to this posture they were made to practise it for several days before the operation.

PASSIVE IMMUNISATION AGAINST SCARLET FEVER.*

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From time to time scarlet fever makes its appearance in wards not intended for sufferers from that disease, both in isolation and in other hospitals, where, apart from the possible consequences to those infected, it may interfere seriously with the admission and discharge of patients. In scarlet fever antitoxin we have at our disposal a means of producing a passive immunity, temporary but valuable, in patients exposed to infection. Comparatively little has been published in this country on the amount of antitoxin adequate for protection. This can be ascertained only by using varying quantities in different series of patients, for, in the absence of any certain method of standardisation, different batches of antitoxin may vary considerably in antitoxin content. Now it is practically certain that no Dick-negative person will develop scarlet fever. Hence, if Dick-positive reactors can be rapidly made Dick-negative and kept negative even for a few days, not only could an outbreak of scarlet fever be limited, but an effort could be made, during this brief period of immunity, to trace and deal with the source of the original infection. The ability of a scarlet fever antitoxin to produce and to maintain passive immunity as measured by the Dick test provides us with a rough method of estimating its antitoxic content, but this passive immunity method must be correlated with other methods before we can hope to arrive at a sound method of standardisation.

In this investigation I have limited my work to an attempt to determine the amount of antitoxin sufficient to protect susceptible contacts of scarlet fever for a period of seven to ten days. I have chosen this period for two reasons: first it is unlikely that a patient, who has been rendered Dick-negative within a few hours of exposure to infection, will develop scarlet fever if that passive immunity is maintained beyond the period of incubation; secondly, although a period of 14 days might be safer, the amount of antitoxin required for this is probably more than twice that which is adequate for a period of seven to ten days. Part of this work was done in wards where no scarlet fever had occurred, but latterly the appearance of an occasional case of that disease among diphtheria convalescents made it necessary to prevent the spread of infection by producing passive immunity in susceptible contacts. It may be urged, of course, that outbreaks of scarlet fever in diphtheria wards are usually limited to one or two patients, and that passive immunisation is therefore unnecessary. It can never be certain, however, that scarlet fever will not spread more extensively, and it seems only reasonable to make use of a preventive measure which is both simple and effective.

In the following experiments scarlet fever antitoxin was given intramuscularly to several series of Dick-positive diphtheria convalescents. Dick re-tests were carried out in 24 hours on all patients; in 48 hours in those who were still positive at the first re-test, and subsequently at weekly intervals until they again became Dick-positive, or for as long as their stay in hospital would allow. In dealing with a diphtheria ward where scarlet fever had made its appearance, all the contacts were immediately Dick-tested, and antitoxin was given to the positive reactors. Re-tests were made at similar intervals. Except where otherwise stated, the Dick toxin employed was a 1/1000 dilution of ×48.

Table I. shows the results obtained in a series of ten children with a dose of 5 c.cm. of an unconcentrated serum (A). This table shows that only four out of ten were rendered Dick-negative in 24 hours, and that the remaining six were still positive in 48 hours. All ten were positive at the end of seven days. 5 c.cm. of this serum, therefore, was quite an inadequate dose.

TABLE I.

Serum.—Type A; dose 5 c.cm.

No.	Age.	Re-tested in— 24 hrs.	48 hrs.	7 days.
1	5	+	+	+
2	3	0		+
3	4	0		+
4	4	+	+	+
5	2	0		+
6	3	+	+	+
7	3	0		+
8	6	+	+	+
9	3	+	+	+
10	2	+	+	+

TABLE II.

Serum.—Type A; dose 10 c.cm.

No.	Age.	Re-tested in— 24 hrs.	48 hrs.	7 days.	14 days.
1	5	0		0	+
2	4	0		0	+
3	2	±	0	±	+
4	2	0		0	+
5	2	0		0	+
6	6	0		0	+
7	3	0		±	
8	2	±	±	±	
9	4	0		+	
10	3	±	0	±	

Table II. shows the results in a series of ten children with a dose of 10 c.cm. of the same serum. In this experiment seven patients out of ten were rendered Dick-negative in 24 hours, and two of the other three in 48 hours. Five were still negative at the end of a week, but all ten had become positive in 14 days. We may therefore conclude that even 10 c.cm. of this unconcentrated serum was an inadequate dose, and that the amount of such a serum necessary to keep patients Dick-negative for seven days would be too great to be of practical value.

Table III. shows the effect of a concentrated serum (B), given in a dose of 2·5 c.cm. to ten children in a diphtheria ward within 24 hours of the occurrence of a case of scarlet fever. This table shows that all ten patients were rendered Dick-negative in 24 hours and remained so for at least seven days, thereafter becoming gradually positive once more. It also indicates the difference between tests made with toxin dilutions of 1/1000 and 1/500 at periods of 7, 14, and 21 days after administration of antitoxin. Theoretically, at least, this serum was much more satisfactory than its predecessor.

* Part of a thesis submitted to the University of Aberdeen for the degree of M.D.

Case 1 was faintly positive when tested 14 days after immunisation and developed a mild attack of scarlet fever five days later. It is interesting to note that the area of skin on which the Dick tests had been made was not invaded by the rash, while it was surrounded by a bright erythematous ring of greater intensity than the eruption on the forearm. This phenomenon has been noted by Zingher,[1] who attributes the pale area of skin to the development of a local immunity in response to the Dick toxin, the surrounding ring of erythema being due to the sensitised condition of cells containing only a minimal amount of antibody to the scarlet fever toxin. Two further Dick tests were made on this patient on the second day of the eruption, one on the immune area of skin on the forearm, the other about two inches outside this zone. No reaction appeared at the site of the first, while the second was positive. A final re-test on the tenth day of illness was negative.

TABLE III.

Serum.—Type B; dose 2·5 c.cm.

No.	Age.	Re-tested in—						
		24 hrs.	7 days.		14 days.		21 days.	
			1/1000	1/500	1/1000	1/500	1/1000	1/500
1	5	0	0	±	+			
2	5	0	0	±	+			
3	5	0	0	±	0	±	±	
4	3	0	0	0	0	0	0	±
5	3	0	0	0	0	0	0	±
6	3	0	0	0	±			
7	2	0	0	±	±			
8	4	0	0	±	±			
9	1	0	0	±	0	+	±	
10	3	0	0	0	0	0	0	0

No other patient in this series developed scarlet fever while in hospital.

That 2·5 c.cm. of a concentrated serum is not always sufficient to keep patients Dick-negative for seven days is shown by Table IV., illustrating an experiment where that amount of two other concentrated sera (C and D) was given to 18 Dick-positive children in a diphtheria ward, 24 hours after the occurrence of a case of scarlet fever therein.

TABLE IV.

Serum.—Type C; dose 2·5 c.cm. *Serum.*—Type D; 2·5 c.cm.

No.	Age.	Re-tested in—				No.	Age.	Re-tested in—			
		24 hrs.	48 hrs.	7 days.	14 days.			24 hrs.	48 hrs.	7 days.	14 days.
1	3	0		0	0	10	6	+	±	+	
2	4	0		±		11	3	0		0	D.
3	3	+	±	+		12	4	±	0	D.	
4	4	0		0	+	13	4	0		0	D.
5	2	0		0	0	14	4	±	±	+	
6	5	0		+		15	4	±	±	±	
7	3	0		0	D.	16	2	0		0	0
8	3	0		+		17	3	0		0	D.
9	2	±	0	±		18	3	0		0	0

D. = Discharged.

Both these sera failed to make all the children in the respective groups Dick-negative in 24 or 48 hours, and eight of them were positive after seven days. Unfortunately some of these patients were discharged from hospital, so that re-tests in 14 days were impossible, but four out of five were still negative after that period. One of these, however, developed a mild attack of scarlet fever 21 days after the injection of antitoxin, but I am unable to say whether he had by this time become Dick-positive. Case 10, who did not become Dick-negative, was discharged from hospital 11 days after receiving antitoxin, but was readmitted ten days later on the fourth day of a mild attack of scarlet fever. A Dick test on this patient on the following day was negative.

In view of the comparative failure of these sera in a dose of 2·5 c.cm., a further trial was carried out with them in another diphtheria ward where a case o scarlet fever had just occurred. This time a dose o 5 c.cm. was used, and the results are shown in Table V With the striking exception of Case 3 all thes

TABLE V.

Serum.—Type C; dose 5 c.cm. *Serum.*—Type D; dose 5 c.cm.

No.	Age.	Re-tested in—				No.	Age.	Re-tested in—			
		24 hrs.	48 hrs.	7 days.	14 days.			24 hrs.	48 hrs.	7 days.	14 day
1	5	0		0	0	6	5	0		0	D.
2	5	0		0	±	7	5	0		0	0
3	5	±	±	+		8	4	0		0	±
4	1	0		0	0	9	4	0		0	0
5	3	0		0	D.	10	3	0		0	D.

D. = Discharged.

patients became Dick-negative in 24 hours an remained so for at least seven days. Of six whor I was able to re-test in 14 days, four were still negative

Case 3 originally gave a strongly positive reaction. Nin days after receiving antitoxin he developed a mild attack c scarlet fever. During the eruptive stage he showed blanche areas of skin at the site of the previous Dick tests, but n surrounding ring of erythema. A Dick test on the tent day of illness was negative, while his blood serum, taken o the twenty-sixth day, gave a good Schultz-Charlton reactio

Case 2 was discharged from hospital 18 days aft immunisation, but was readmitted 28 days later on th third day of a moderately severe attack of scarlet feve During her initial stay in hospital she had six Dick test performed on the flexor surface of the right forearm, the ski of which now presented an unusual appearance. Over a oval area 5 in. long by 2 in. broad there was profus desquamation, the underlying skin being deeply pigmente while surrounding it was a bright erythematous ring. Th rest of the forearm was invaded by a typical scarlet feve rash. Fourteen days later this area of skin looked quit normal, while typical desquamation was in progress ov the remainder of both upper extremities. The mother c this child volunteered the information that the zone c skin described above had become a vivid red colour about day before the rash began to appear on the neck and ches

Brown[2] also noted this reappearance phenomeno in a few patients, but was unable to confirm Zingher observation that in such cases the site of injection c Dick toxin presented a blanched appearance. He doe not state, however, the time which had elapse between the performance of the Dick test and th onset of scarlet fever, and it is here, I believe, that th explanation of this apparent discrepancy is to b found. In the two cases quoted by Zingher th interval of time was respectively four and seven days in the first two which I have described it was respe tively five and two days, while in the third instance was 29 days from the date of the sixth test and co siderably longer from that of the previous five. W may therefore say, I believe, that when scarlet feve supervenes within a few days of the performance of Dick test, the area of skin affected is still immune an is accordingly not invaded by the eruption. Whe however, a period of three to four weeks has elapse the skin of this part has passed from a state c immunity to one of hypersensitivity to the scarle fever toxin, and the first cutaneous manifestation c infection occurs—in an exaggerated form—in thes hypersensitive cells.

Conclusion.

In these experiments scarlet fever attacked onl those patients who were not rendered Dick-negative c who became Dick-positive after a varying period c immunity. Unconcentrated sera were found to be c little or no value, while of three different concentrate sera one was sufficiently potent to keep ten patien Dick-negative for at least even days in a dose c 2·5 c.cm. This dose has to be doubled in the case c

[1] Zingher, A.: Jour. Amer. Med. Assoc., 1924, lxxxiii., 432.

[2] Brown, W. A.: Scarlet Fever, with Special Reference Susceptibility by the Dick Intracutaneous Test, Brit. Jou Child. Dis., 1925, xxii., 171.

he other two concentrated sera, and even then one atient remained Dick-positive.

I believe, therefore, that 5 c.cm. of a concentrated carlet fever antitoxin is usually sufficient to protect usceptible contacts for a minimum period of seven ays. It is probable, however, that a dose of 10 c.cm. s necessary in those who give a very strongly positive)ick reaction, although further evidence is required on his point.

I am indebted to Dr. D. MacIntyre, medical superintendent, Plaistow Hospital, for permission to record his work, and to Dr. R. A. O'Brien, of the Wellcome Research Laboratories, for supplying me with the necessary toxin and antitoxin.

IRRADIATED ERGOSTEROL IN THE TREATMENT OF RICKETS.

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During the past decade there have been great dvances in the treatment of rickets, advances in art empirical and in part founded on recent progress n the theoretical knowledge of the disease. Treatment s in a condition of flux; a few years ago the value of diet rich in antirachitic vitamin was stressed; last ear actinotherapy was hailed as the ideal; to-day, he oral administration of artificially prepared concentrated antirachitic vitamin is being tried and bids air to become the standard treatment of the future. Rickets can be cured by many different means; ntirachitic diet, cod-liver oil, heliotherapy, actinotherapy, and the oral administration of concentrated ntirachitic vitamin have all been used. The length f time necessary to effect a cure differs widely ccording to the method of treatment, the patient's ge, and idiosyncrasy. The rapidity with which a ure can be effected is important, for not only is the hild's period of invalidism shortened and the risk of ntercurrent disease due to lowered resistance reduced, ut the danger of deformities is minimised.

That rickets is caused by a deficiency in the body f the antirachitic vitamin D is now generally agreed. Both the antirachitic vitamin and ultra-violet light an protect against rickets. The vitamin must be ncluded in the food; ultra-violet light, whether atural or artificial, can act either through the food r directly on the body. The light acts on the ro-vitamin contained in the food or else on the ro-vitamin normally present in the cutis vera, onverting it into the active antirachitic vitamin.[1]

Ergosterol, a sterol originally prepared from ergot, s widely distributed. The recent work of Rosenheim nd Webster[2] has shown that after irradiation rgosterol becomes very powerfully antirachitic. The work of these observers suggest that ergosterol s the pro-vitamin and that irradiation converts it nto the actual antirachitic vitamin. The British)rug Houses prepare a suspension of irradiated rgosterol and call it "Radiostol." This preparation as used in the treatment of the patients described n this paper. Their general condition improved oncurrently with the radiological evidence of healing f the epiphyseal lesions, although deformities were ot improved.

Radiographic Evidence of Cure.

It is difficult to appraise the curative properties of ny particular method of treatment. In the following bservations reliance has been placed on radiograms f the wrist, both in diagnosis and in determining he cure. E. Mellanby[3] has shown that radiograms resent a true criterion of the disease in animals. n order to make a comparison possible between the esults of different methods of treatment an attempt as been made to keep uniform the standard of iagnosis and cure. In children the clinical cure is lways, I think, preceded by the healing of the bony lesions. This process may be visualised in serial films taken at frequent intervals. It must be borne in mind, however, that the radiological evidence of healing of the bony lesions is not always followed by a clinical cure, for after calcification of the epiphyses is complete, the square head, bowed legs, and enlarged radial epiphyses not infrequently remain, and may persist for many months. Apart from these gross stigmata, the clinical improvement that follows the process of healing, visualised in serial radiograms, is very striking. A child suffering from active rickets adopts the motionless Buddhaesque pose and contemplative mien of the saint; a radiogram of the wrist shows active rickets. After a few weeks' treatment by one of the newer methods the child becomes active and lively, jumping about in his cot and keeping up a continual chatter of baby talk; a radiogram now shows that healing is well advanced.

The earliest structural changes that occur in rickets take place in the cranial bones and at the costochondral junctions; at the present stage of radiographic technique these cannot be photographed. The radiogram of the wrist shows changes only when the disease has passed its earliest stage; the first signs are slight fuzziness at the distal end of the ulna followed by splaying of the distal end of the radius and accompanied by a varying degree of osteoporosis. In the more advanced stages both the epiphyses and the diaphyses are affected. The former is smaller than normal, more irregularly ossified, and separated from the diaphysis by an abnormally wide and ill-defined zone of proliferation. The end of the diaphysis is broader than normal and shows evidence of disordered and irregular growth. It may show cupping and fraying. The medullary cavity is wide and translucent to the rays. Healing is shown by the increasing density of the bone shadow, the ossification of the epiphysis, the filling-in of the concavity at the end of the diaphysis, and finally by the thin white line characteristic of healed rickets.

Clinical Records.

The dose of radiostol used at first was three minims thrice daily; later it was increased to ten minims thrice daily, administered in a suspension of mucilage. None of the patients showed any signs of intolerance. No cod-liver oil was given; the patients were treated indoors in a hospital ward.

Case 1.—On admission this patient, a male infant aged 1½ years, showed clinically active rickets. A radiogram of the wrist showed slight fuzziness of the distal end of the ulna and splaying of the end of the radius, together with slight osteoporosis—conditions indicating early rickets. Three weeks after the commencement of treatment with radiostol a radiogram showed definite evidence of healing, increased density of the bone shadow, and clear definition of the ulna and of the radial epiphysis. During the treatment the general condition improved markedly and the infant gained weight rapidly.

Case 2.—On admission this patient, a girl aged 1 year and 8 months, suffered from active rickets. A radiogram of the wrist showed moderately severe bony lesions. A radiogram taken four weeks after the commencement of treatment showed that healing had occurred.

Case 3.—On admission this patient, a boy aged 1 year and 9 months, suffered from active rickets. A radiogram showed very severe bony lesions at the wrist, indicated by cupping and fraying of the ends of the diaphyses of the radius and ulna. A radiogram taken eight weeks after the commencement of treatment showed that the bony lesions were almost healed. The child's general condition also improved.

Case 4.—When admitted this patient, a girl aged 3 years and 9 months, suffered from active rickets and a marked varus deformity of the lower limbs. A radiogram of the wrist showed moderately severe rickets, indicated by splaying and fuzziness of the ends of the diaphyses of the radius and ulna, and a marked degree of osteoporosis. A radiogram taken six weeks after the commencement of treatment showed that the bones were almost normal in consistence. The child's general condition had improved, but the deformities of the lower limbs were practically unaltered.

Case 5.—On admission this patient, a boy 3½ years old, showed very marked lateral bowing of both tibiæ. A

radiogram of the wrist showed very severe rickets. He was given massage and daily moulding, immobilised with Liston splints, and treated with radiostol. Six weeks after the commencement of treatment there was definite radiological evidence of healing which was completed four weeks later. The bony deformities of the legs, however, were practically unaltered.

The last two cases are instructive, as they illustrate an incorrect method of treatment. These patients, who both showed marked deformities, ought to have been given no specific antirachitic treatment until the deformities were cured. All clinicians who make a routine radiological examination are aware that active and severe rickets is not infrequently present in a patient suffering from marked deformities. It is a mistake to treat such a patient with any method that rapidly produces calcification of the bones, for the deformity is thus stabilised, the natural curative process of growth is retarded, the corrective effect of massage and moulding is decreased, and osteotomy is more often necessary.

The Time Element.

For comparative purposes the results obtained at Alder Hey Hospital by other methods of treatment are of interest. It was found [4] that cod-liver oil and malt and antirachitic diet effected a cure in a radiologically severe case in approximately 15 weeks; exposure to the rays of a carbon-arc lamp in addition, did not appreciably hasten healing; exposure to the rays of a tungsten-molybdino-core carbon arc, in addition to cod-liver oil and diet effected a cure in approximately nine weeks; while exposure to the rays of a new mercury-vapour lamp and the administration of irradiated cholesterol with cod-liver oil and diet, together effected a radiological cure in approximately five weeks. Several of the patients treated with radiostol received too small doses at the commencement of the treatment.

Actinotherapy in the treatment of rickets is rapidly becoming a thing of the past; for in irradiated ergosterol the pædiatrician possesses a potent antirachitic agent, more effective than cod-liver oil, and when administered in sufficient doses, probably more effective than artificial ultra-violet rays, and certainly simpler and more economical in practice.

I wish to thank Lieut.-Colonel P. Macdiarmid, M.D., medical superintendent of Alder Hey Children's Hospital, for permitting me to publish these cases.

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Clinical and Laboratory Notes.

TWO CONSECUTIVE ABDOMINAL PREGNANCIES.

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THE following case appears worthy of note, as two consecutive abdominal pregnancies in the same patient must be extremely rare.

A Hindu woman, aged 35, was admitted to the Maternity Hospital, Agra, on March 1st, 1924, complaining of enlargement of abdomen and amenorrhœa for one year, followed by blood discharge for one month. Eight children; two alive. Last child two years ago.

On examination the abdomen was found to be enlarged by a tumour the size of a full term pregnancy; tumour was very hard in places, but definite fœtal parts were not palpable, owing to rigidity of the abdominal muscles. No fœtal heart sounds were heard. On vaginal examination the tumour was found to extend into the pelvis, which appeared to be filled with a soft solid mass. A provisional diagnosis of ovarian tumour was made.

On opening the abdomen on March 4th a thick wall, like that of a malignant ovarian cyst, presented. A child's foot was felt through a thinner portion of the sac, and a dead full term child was removed. The child had obviously been dead for some time; the placenta, situated in the lower abdomen and pelvis, was partially dried up and thus easily shelled off. Probably the history was correct and the child had been dead three to four months. Oozing was stopped by adrenalin solution. Much of the sac had to be left *in situ*; its edges were drawn together in the lower part of the wound, and tube and packing were inserted. The abdomen was closed, except in the lower 2 inches, by through-and-through silkworm-gut stitches. On March 5th the packing was removed and tube changed under chloroform. The tube was left out on the seventh day, and patient was discharged cured after three weeks.

On June 4th, 1926, the same patient was again admitted into the Maternity Hospital, complaining of pain in the back and lower abdomen. It happened that every member of the staff who knew her history was on leave. As she gave a definite history of a child taken out per abdomen, and as Cæsarean sections are extremely common, her old notes were not looked up. She said she was about seven months pregnant, had had strong pains for three days, and had felt no fœtal movement after the pains stopped.

On examination the uterus appeared enlarged to the size of a 6½ months pregnancy; os closed, cervix soft, pulsation in the fornices. Fœtal parts not distinctly felt; this may have been due to thickening from the old sac. There was no indication for immediate emptying of the uterus. Patien left hospital after six days, and was told to return.

On Nov. 15th, 1926, patient was admitted into th gynæcological ward with a history of pain in the abdome and offensive, blood-stained, purulent vaginal dischar for three months following amenorrhœa. She gave a history of having been in the maternity ward in June, b was recognised as having had an abdominal pregnancy tw years previously, and her old notes looked up. There w slight fever. On examination a mass was felt reaching the umbilicus, hard and tender, very slightly movable. O vaginal examination a large, hard uterus was felt, surrounde apparently by a mass of inflammation, and adherent to th old scar; purulent discharge from the cervix, but no su gestion of a collection of pus, or any indication for oper tion. Diagnosis of chronic inflammation was made, pr bably originally due to an infection of the portions of s which had been left after the operation. Patient w treated on the usual lines, but only remained ten days hospital as she felt better and discharged herself.

On March 15th, 1927, patient was admitted into th septic surgical ward for a discharging sinus in the abdome She refused any operation and left at once.

On April 4th, 1927, she was readmitted as a septic surgic case. There was thick, very offensive pus discharge fro the old scar and the inflammatory mass below it. On th 8th an incision was made and the sinus investigated. Th first thing which appeared was the humerus of a five mont fœtus. The rest of the bones were removed and the cavi carefully swabbed out and drained. On the third day fæcal fistula developed; this persisted for about a mont but finally closed, and on May 26th the patient was d charged cured with wound completely closed.

This case illustrates well the difficulties und which work is done in India, where patients refu treatment and take their own discharge, and the is no antenatal organisation. At the first operati it was not possible to disturb the parts to find o which tube had ruptured, and the patient insist on going out directly the wound healed before th pelvic organs could be separately palpated biman ally. I did not see her again till she appeared tw and a half years later with a hard inflammatory ma reaching to the umbilicus, giving no history pregnancy subsequent to the operation or of havi been in the maternity hospital five months previousl

Full term abdominal pregnancies are comparative common in India. During 17 years' operative wo in women's hospitals in Delhi, Calcutta, and Agra have had four. The first was full term with a li child. On abdominal inspection the outline of th child's fingers could be seen beneath the abdomin wall; in this case the pregnancy had occurred fir in the left tube and secondarily in the broad ligamen from which it had ruptured into the abdomin cavity; the placenta was folded on itself and almo

pedunculated, and was easily tied off. The child had double talipes and marked torticollis; though delivered with pulsating cord it did not live. The mother, who had been doing hard labour as a coolie woman all through her pregnancy, made an uninterrupted recovery.

The second case, also full term, came in with false labour pains; abdominal pregnancy was diagnosed, and I operated instead of waiting as I now should. The thinned-out placenta was attached to the whole anterior abdominal wall, from costal margins to pubes, and the patient died on the table from uncontrollable hæmorrhage.

The third fœtus had been dead some months and had a thick sac very similar to the case first described. Recovery was uneventful.

A CASE OF LABOUR WITH COMPLETE OCCLUSION OF THE EXTERNAL OS.

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Cases of occlusion of the cervix uteri during labour are of sufficient rarity to be worthy of record, and the following is an interesting example.

The patient was admitted to the maternity hospital on August 5th, 1927, after a car ride of over 40 miles. She was a 4-para who had had three previous normal labours. On admission the pulse-rate was 88, temperature 98·4° F., and general condition good. She had been in labour since the previous afternoon. On abdominal examination the vertex was found presenting in the left occipito-anterior position, the head being deep in the pelvis and well flexed. On vaginal examination the head was found to be completely covered by the distended walls of the cervix. There was a slight linear mark about half an inch long in the most dependent part, but no opening whatever. A crucial incision, with its centre over the mark, was made; the liquor amnii at once escaped and the head was felt. Complete dilatation rapidly followed and a stillborn female child, deeply stained with meconium, was easily delivered with forceps. The cervix was sutured with catgut, leaving an opening in the centre.

On discharge from the hospital the cervix appeared normal and duly patent.

The patient had a history of prolapse, the cervix (?) coming outside the vulva, during early pregnancy. The probable explanation is that ulceration of the prolapse with healing and contraction took place after conception.

A good account of the complication is given by Spiegelberg,[1] who refers to the old term "conglutinatio orificii externi" of Naegele, and distinguishes the results of cicatricial inflammatory closure from those due to a collection of inspissated epithelium in which no scar tissue is present. The latter condition can be easily broken through without incision. R. Barnes[2] reports a case in which the os was completely closed by cicatricial tissue contracting concentrically. Severe labour pains failed to open it. He incised the centre of the scar and nicked freely all round. The cervix expanded with wonderful rapidity as soon as the unhealthy tissue was divided. In cases of stenosis without complete occlusion the dilatation of the cervical walls occurs mainly at the expense of the anterior wall, so that the small external os is displaced high up and backwards. In the present case the posterior wall was relatively more distended, and the small scar was easily accessible below and in front. In the case of a young primipara under my care (E. O. C.) some years ago there had been primary elongation of the cervix, and where labour had been prolonged many hours no cervical aperture could be detected. Under anæsthesia, however, a minute depression was found high up and looking backwards. A small surgical probe penetrated this, and the opening was gently drawn down and held in a more correct position relative to the uterine axis. Dilatation and delivery proceeded rapidly and normally. This was probably a condition of "conglutinatio" (Munro Kerr illustrates a similar case[3]). In both my cases the "wonderful rapidity" mentioned by Barnes was very striking.

[1] O. Spiegelberg: Text-book of Midwifery, New Syd. Soc. Trans., 1888, ii., 134.
[2] R. Barnes: Lectures on Obstetric Operations, 1876, p. 92.
[3] Munro Kerr: Operative Midwifery, 1908, p. 202.

TREATMENT OF OBESITY BY ULTRA-VIOLET RAYS.

By C. L. Williamson, M.R.C.S. Eng.,
AND
C. H. Broomhead, M.D. Manch., M.B., B.S. Lond.

We hope that the following details may be of interest to medical men who include ultra-violet light in their therapeutic armament. Dr. Howard Humphris in his admirable text-book "Artificial Sunlight and its Therapeutic Uses," makes the following remark:—

"I do not recommend the treatment of obesity by ultra-violet light. Electricity has other and better means at its disposal than this; but, as it is a state of disordered metabolism, accompanied by superfluous deposits and various functional disturbances, it is interesting to note that an agent such as ultra-violet light, which profoundly and beneficially affects metabolism, does so in a disorder which is so basically metabolic."

Conclusive evidence of the beneficial effects referred to by Dr. Humphris is given in the following case.

Our patient was an obese man aged 52 years; his personal habits were temperate. His occupation required him to travel a great deal, and he seized every opportunity of walking, but no reduction in weight resulted. He complained, apart from the "burden of the flesh," of dyspnœa and palpitation. There was a slight increase in the area of cardiac dullness to the left. No bruits were detected. The blood pressure was normal for his age and there was no protein in the urine. Numerous extrasystoles were present. His course of ultra-violet irradiation consisted, in all, of 49 exposures, the first ten being given twice weekly and the remainder, owing to the pressure of his business engagements, once a week. For each dose he was stripped to the waist only. The first 28 irradiations were administered by the tungsten arc with the mirror reflector and began with an exposure of three minutes each on the back and front of the body at a distance of 18 in. from the electrodes, gradually increased to a maximum of eight minutes each, back and front, at the same distance. The twenty-ninth to the forty-ninth doses were all given with the air-cooled "Uviator" lamp made by Messrs. Kelvin Bottomley and Baird, and ranged from an initial exposure of three minutes each, back and front, at 24 in., to five minutes at 12 in., the ammeter registering 2·75 amps. The result was interesting. After the thirteenth dose the extrasystoles vanished and did not return. The alteration in weight was even more noteworthy. The weighing was carried out by the patient himself, a very intelligent man, upon the same pair of scales which were tested at frequent intervals. He was weighed in the same clothing and at the same time of day at weekly intervals. Before treatment he scaled exactly 238 lb. After the first six doses he had dropped to 230 lb. The twenty-sixth dose had reduced him to 212½ lb. From the twenty-seventh to the forty-ninth applications he received, in addition to the light, a mild weekly dose of faradism, applied chiefly to the abdomen. At the conclusion of treatment his weight had fallen to 194½ lb., a loss of 43½ lb. in all. The decrease was not invariably progressive. On four occasions there was a gain over the weight of the previous week, but never of more than one pound, and on five occasions the weight was unchanged. No special dieting was carried out nor were any drugs, except a simple "after-dinner" aperient pill, taken. The general health improved progressively, and the patient cheerfully purchased new suits of clothes as his old ones fell, in more or less graceful folds, upon his body. His 19-inch collar was replaced by one of 17½ in. Three months after his last visit to us his weight was 193½ lb. and he was feeling remarkably well.

The title of this article may be objected to as misleading, since electricity was also employed. It is, however, to be noted that before faradism was applied

he had already lost 25½ lb. in weight. So far as we are aware the principal modern treatment of obesity by electricity alone is by the Bergonié method, which involves rather costly apparatus. It is, of course, not to be inferred that ultra-violet light is an infallible remedy for adiposity, but we suggest that it is feasible, pleasant, and harmless. We feel convinced that better results have been obtained by other actinotherapists, and it would be of interest if they could be recorded.

Liverpool.

Medical Societies.

MEDICAL SOCIETY FOR THE STUDY OF VENEREAL DISEASES.

AT a meeting of this Society held on Jan. 27th Sir HUMPHRY ROLLESTON, the President, took the chair, and Dr. DAVID NABARRO opened a discussion on the

ANTENATAL TREATMENT OF SYPHILIS.

It did not come within his province, he said, to see women during and immediately after gestation, and to present the material needed for his purpose it had been necessary for him to read through a great deal of the work of others. Since doing so he had become aware of the valuable article recently published on the subject by Boas, of Copenhagen.

It was only comparatively recently that the attempt to prevent congenital syphilis by treating the mother during pregnancy had been revived; no reference was made to it, for instance, in the large work on syphilis by D'Arcy Power. Three groups of cases should be borne in mind. In the first group were people infected with syphilis who wished to marry. No one so infected should be allowed to marry unless two years of adequate treatment, dating from the primary sore, had been received; and even then consideration must be given to a number of other factors. In the second group were those who contracted the disease after marriage, symptoms showing themselves in either partner. In these circumstances both partners should receive energetic treatment, for their own sakes and for that of probable offspring. The mother should be warned against conceiving a child sooner than six months after commencing treatment. If she was already pregnant there should be no delay in beginning antisyphilitic measures. The third category comprised those women who, though presenting few or no signs of the disease, gave a history of one or two miscarriages. They should be treated as soon as possible in the pregnancy and should have similar attention at each succeeding gestation.

The first centre in this country for treating venereal disease had been established by John Adams in Thavies Inn, and there the antenatal treatment of syphilitic mothers was very successful, the last 37 women treated having given birth to 37 living infants. Without following up the cases further it could not, however, be said that all these children were free from infection. The statistics of J. W. Williams, of Johns Hopkins Hospital, showed that syphilis appeared in 49 per cent. of the offspring of 169 untreated pregnant women, in 39·2 per cent. of those of 102 inefficiently treated women, and in 6·7 per cent. of the children whose mothers, 179 in number, had been properly treated during pregnancy. Hence it was clear that even efficient treatment of the mother did not make it certain that the issue would be a healthy child. It must also be remembered that though a placenta looked healthy, the child might be syphilitic. The percentage of syphilitic children born after the mothers had been efficiently treated, taken over a series of years, varied between 3·7 and 7·7.

Methods of Treatment.

The older practitioners, said Dr. Nabarro, had t choice of using either mercury or iodide of potassiu Some preferred not to treat the mother duri pregnancy because they feared abortion. Salvarsa or its substitutes, seemed best, though Boas and h colleague Gammeltoft considered that the best resul in their hands followed the use of silver-salvarsa Whatever drug was chosen the great need was th the treatment should be efficient. Most of D Nabarro's cases had had novarsenobillon. Bo supplemented the silver-salvarsan by mercuri inunction; he gave six or eight injections of silv salvarsan, and after a month's rest from treatment further course, with mercurial inunction. Anoth rest brought the patient to the middle of the pregna period, the time when, it was generally agreed, t spirochætes began to wander through the placenta a infect the fœtus. At such a time there should be access of energy in the treatment. Dr. Nabarro sa he had been content to treat expectant mothers w came to him on the same lines as an ordinary case i.e., by giving weekly injections of N.A.B. with exa ination of the urine before beginning treatment, and monthly intervals to make sure that the kidneys we working properly. Tartar and sepsis of teeth or mou must always be put right. For pregnant mothers started with only 0·3 g. of N.A.B., working up to 0 and the course was repeated as often as possible duri gestation. If oral administration of mercury was fou to do as much good as injections it should be adopt in preference as it was more convenient. Wi regard to treatment in succeeding pregnancies, it mu be borne in mind that, even in the absence of tre ment, the intensity of the syphilitic infection seem to diminish, so that after repeated gestation t tendency was for the offspring to be born healt Still, a woman could give birth to a syphilitic ch 20 years or more after her one infection with t disease; in one case this happened 37 years aft wards, the disease in that case having been contract in childhood. Dr. Nabarro raised the interesti question whether treatment of mothers duri pregnancy might prolong the period during which th could give birth to syphilitic children. Often only small amount of treatment of the mother had be found to ensure that her child should be healt Prof. F. J. Browne and others advocated t compulsory notification of pregnancy. Possibly th might come sometime in the future as a result education, but the speaker thought there would grave objections to it at the present time. Mu could be done by the establishment of sufficient V clinics for pregnant women in all large cities, and h could be given by maternity and child welfare centr

Colonel L. W. HARRISON devoted his attention the question whether it was worth while to mak bigger effort than at present to reduce the incidence congenital syphilis by the antenatal treatment expectant mothers, and, if so, along what lines th effort should be directed. There was now availa overwhelming evidence that if it were possible place every syphilitic pregnant woman under tre ment, congenital syphilis would almost vani Whatever amount of treatment such mother mi have had before pregnancy she should be trea during pregnancy. It had been calculated that 16 cent. of stillbirths were due to syphilis, and for seven years 1920–26 there were 25,000 stillbirths this country. The Departmental Committee on Causes and Prevention of Blindness concluded t syphilis was the direct cause of 10 to 15 per cent. the blindness at present existing in this country, wh many other cases of sight failure were due to degene tive changes consequent on vascular disease possibly syphilitic origin. In March last 46,822 bl persons were registered in England and Wales—i "too blind to perform work for which eyesigh essential." 16,000 syphilitic pregnant women annum stood in need of treatment, but nothing this number were being treated. Colonel Harris

ain contention was that a much greater amount treatment must be carried out than at present by e practitioners who discovered the syphilis in the st instance ; the women had confidence in their own ctor, whereas V.D. specialists were unknown to them.

Discussion.

Dr. A. C. ROXBURGH gave some figures from a small tenatal clinic in Battersea with which he had been nnected for some years. As a result of the treatment syphilitic pregnant women during the period of station, the proportion of positive Wassermanns nong them had steadily diminished. In 1924 it as 3·5 per cent., in 1925 2·1, in 1926 it had fallen to 5. Of 41 syphilitic women so treated only three owed any outward evidence of syphilis, so that the agnosis had to rest entirely on the result of the assermann test. The treatment he carried out was weekly injection of N.A.B. for eight weeks, con-nuing thereafter fortnightly, to the accompaniment mercury pills throughout.

Dr. T. ANWYL-DAVIES submitted a series of atistics of cases of syphilitic expectant mothers ated at the V.D clinic at St. Thomas's Hospital. efore antenatal treatment was established, of 9 pregnancies 50 per cent. produced children who re unhealthy. 300 syphilitic expectant mothers re put on to treatment and only 9 per cent. of the spring were unhealthy. Even one course of treat-ent greatly reduced the severity of infection in the ild. He firmly believed that if once a woman came syphilitic she was liable at every subsequent egnancy to produce a syphilitic child. The old idea at the treatment increased the risk of post-partum emorrhage had been shown to be a myth. At St. omas's, where the department had its own lying-in rd, there had been no instance of post-partum emorrhage in eight years.

Dr. DOROTHY LOGAN said that once she saw good ason for putting a woman upon antisyphilitic eatment she did not discontinue or modify it cause of pregnancy. Usually she was content to ve seven injections of N.A.B., but mercury was ntinued much longer, and potassium iodide was ven in gradually increasing doses.

Dr. MARGARET RORKE said the average amount treatment given to pregnant syphilitic women before 20 was inadequate. In her view the ideal means of eatment was a combination of 914 with mercury. casionally a woman could not tolerate arsenic, and those cases bismuth was substituted. In her clinic amination of the urine was made before each jection, and if there was an indication of toxæmia ermediate treatment was carried on for a time. re treatment and a longer period of supervision uld be needed before she could be satisfied that r work would stand inspection in 15 years' time.

Dr. F. FOWLER WARD had also noticed that at bsequent pregnancies syphilitic mothers often gave th to healthy infants. Yet his practice was to duce all syphilitic mothers to receive treatment at ch pregnancy. In those who had had syphilis for me years he could seldom obtain a negative assermann.

Dr. DENNIS VINRACE did not see the need for acing pregnant syphilitic women in a separate tegory. He did not think that compulsory notifica-n of pregnancy would be acceptable.

Dr. T. J. WRIGHT spoke of the preference of some actitioners for the intramuscular and deep sub-taneous methods of giving the arsenical prepara-ns, as they were supposed to be better than the travenous method.

Reply.

Colonel HARRISON replied that during the war bcutaneous injection was found to be more effective an intravenous ; it was 12 per cent. better in parate series of 200 cases.

Dr. NABARRO, in reply, said he considered that ramuscular treatment often gave better results an intravenous, both in adults and in congenital philis in children. But the intravenous was the less painful, and it was not uncommon for patients, especially young ones, to complain of pain at the site of the intramuscular injection on returning home. It would be generally agreed that the Wassermann being positive meant the presence of living spiro-chætes in the body, though whether they were necessarily causing harm was open to question. He agreed it would be very difficult to bring about notification of pregnancy, whatever good practical results might be expected from it, as mothers would be naturally diffident about proclaiming the fact. The great difficulty in this matter lay in following up the cases. Some of the obstacles in the way of bringing patients to the hospital again were real ones, as in cases of poor people living 20 miles in the country ; also, a woman advanced in pregnancy shrank, as a rule, from being much in public.

TUBERCULOSIS SOCIETY.

AT a meeting of this Society held on Jan. 20th there was a discussion on the

Work and Aims of Tuberculosis Care Committees and Kindred Agencies.

Dr. GEORGE JESSEL said that he had been actively concerned in the establishment of nine care committees and in the administration of other forms of public assistance. Since the first committee of this kind in Lancashire was established in 1913 their scope and function had become narrower, many of their activities having become part of the ordinary dispensary routine. The work of dispensary medical officers and nurses was in itself a most important form of care work, including as it did sympathetic instruction and encouragement of patients and their families, as well as the provision of many necessary articles, such as sputum flasks. In spite of the numerous other public sources of assistance available for poor consumptives and their families, he thought there remained a good deal of scope for the activities of care organisations. If, however, these were to be really efficient, they must have accurate information both about the medical condition of the patient and about his social and financial circumstances. This information it was the function of the tuberculosis officer and of the tuberculosis health visitor to supply, and the dispensary should be the centre of all care activity, in order to ensure proper coördination of the help given to each family.

Dr. Jessel's own area had a population of 339,704, of whom, at the beginning of 1927, 1908 were under dispensary supervision. The Lancashire care committees included representatives of district councils, boards of guardians, trade-union organisations, employers' organisations, local health officials, and other individuals known to be interested in social work. Theoretically it was not difficult to secure a membership which was nominally representative, but in practice it was not always possible to maintain its representative character, one great hindrance being the dominance of one political party, which resulted in keeping away those of opposite views. Care committees were better without advanced politicians.

The existence of care committees, he thought, relieved the tuberculosis officer of the responsibility of acting as a relieving officer, and while the tuberculosis officer must keep in constant touch to prevent the committee from running off the rails for want of proper guidance, yet the committee must be made to realise that it was ultimately responsible for its decisions. The committees acted also as educational centres, and in many cases they had organised lectures by the tuberculosis officer, thus assisting in the larger campaign against the disease. One of the avowed objects of the work was to give temporary assistance and to prevent patients and their families from becoming chargeable to the local board of guardians, which was economically unsound, apart from questions of sentiment. If the assistance required was very great, the case might have to be referred to the

relieving officer. It was not well enough known that a poor-law medical officer might sanction extra nourishment to the sick poor. Among the more valuable ways in which help was provided by care committees was the loan of bedsteads and mattresses. Sleeping arrangements in infectious cases had steadily improved within the last ten years, in spite of the overcrowding. The most difficult problem was to find work for patients, especially now that trade was so bad; a patient must usually be fit in order to do a full day's work regularly. Figures for Dr. Jessel's own area last September showed that of 526 pulmonary patients under active medical supervision by the tuberculosis officer, 248 were unfit for work, 208 were working, and 70 (13 per cent.) were out of work although considered fit for it. It was wise, if possible, to place patients in occupations bearing some relationship to those with which they were familiar. As a rule, what mattered most was not the job but the conditions under which it was done.

Dr. A. P. FORD pointed out that the work of a care committee in a county area necessarily differed in many respects from that of a large city or town. The patient to be cared for should be known personally to those trying to help him, and this object could not be attained by the creation of one committee for the whole county. The difficulty had been met in Hertfordshire by the appointment of one or more influential persons in various urban and rural localities who were willing to undertake the work, while the only after-care committee functioned in the largest borough of the county. It was much easier to get things done promptly when one individual was responsible than when the matter had to be referred to a committee. Dealing with the duties of a care committee or care worker, Dr. Ford said that while it was a great advantage to have a small fund at their disposal, he thought that this fund should not be used for providing nourishment or necessities. Such provision was the duty of the board of guardians or the local authority. It was usually easy in these days to persuade a patient to apply for assistance from the relieving officer, and it was to be hoped that as a result of impending changes in the legislation regarding boards of guardians, the system of granting outdoor relief to sick persons unable to follow their occupation would be so simplified that every genuine case would receive adequate and immediate assistance. With regard to tuberculous patients, however, much closer coöperation would be necessary between the relieving officer and the tuberculosis officer if this object was to be attained. The fund at the disposal of the care workers could be used to great advantage in providing extra clothing for patients, assisting to pay for domestic helps, in paying for structural alterations to improve unsuitable home conditions, and in many other ways which would not come under the functions of the board of guardians, such as rendering assistance to the family when the mother developed tuberculosis. Care workers visiting the homes of tuberculous patients should be careful not to take on the function of the official health visitor, such as the search for contacts, which was part of the duties of an officer who had been trained in such work. Discussing the question of employment of ex-sanatorium patients, Dr. Ford said that mothers of families provided the most difficult problem of all, and it was with this class of patient that the assistance of the care worker was most urgently needed. The work of a housewife with a young family was probably the most unsuitable occupation for a tuberculous patient. He did not recollect any case of arrest of the disease in a mother of a working-class family, with tubercle bacilli in her sputum, who had to return to the care of her household on discharge from the sanatorium. Drugs and extra nourishment were of no avail unless some arrangement could be made whereby the mother was relieved of the majority of her duties and worries. With regard to ex-Service men, Dr. Ford said that he had never come across a pensioner who had been able to earn an adequate living, outside an institution, by means of a new occupation he had been taught as a result of a st of 12 months or so at one of the various traini colonies.

Miss K. LEWIS (Public Health Department, L.C. contributed a paper, read in her absence Dr. G. T. HEBERT, on the work and aims of tuberc losis care committees in London. There were, s said, 26 borough care committees, most of which w doing useful and constructive work, up to the standa desired by the London County Council. In th other boroughs the functions of the care committ were performed by a health worker or almon The L.C.C. had laid down a scheme for the guidan of care committees, and Miss Lewis discussed t with special reference both to the ways in which t committee should receive its information abo patients and the kind of assistance which it co provide. The arrangements about assessments residential treatment were also gone into. No co tribution was assessed in respect of any insur person whose income was the main support of t family and would be sensibly reduced while he w undergoing treatment, or in the case of an ex-Serv man in respect of whom the Ministry of Pensio defrayed the cost of treatment. In the case of childr a small contribution, roughly equivalent to the c of maintenance of the child at home, was assessed the circumstances appeared to justify the dema In no case, however, was the provision of treatm delayed until an assessment had been made.

A recent departure, said Miss Lewis, which mig in time come to rank as one of the most import duties of the care committees, was the organisati and management of handicraft classes. These class which entailed no expense to the dispensary servi were intended for patients discharged from sa toriums after treatment who were anxious to t up work but were physically unfit to compete in t labour market. The value of the work lay rather providing the patients with a new interest a occupation than as a means of earning money, b the proceeds of the sale of the articles covered least the cost of production. Three such classes h been started successfully, two more were beginni this month, and four were in process of organisatio

Discussion.

Dr. S. VERE PEARSON said that the main probl was economic. He agreed that the housewife was most difficult type of patient to deal with, and t was true not only of the insured class but also middle-class patients.

Dr. N. DONNELLY thought that two of the m useful ways in which care committees could help v in the supply of home helps, and in the boarding of children from infected homes.

Dr. G. MACDONALD wished to stress two poi First, that the person who dealt with the care co mittee should be the secretary of the dispensary a should be a paid official. No case ought to co before the care committee without the knowledge the tuberculosis officer. Secondly, there ought to more coöperation between tuberculosis officers and heads of hospitals. It was better if the communi tion could be direct. He thought the care co mittee ought not to have control of large funds, should have a small fund for emergencies.

Other speakers referred to the great help receiv from the Charity Organisation Society and Invalid Children's Aid Association, through wh much of the work of the care committees in cert areas was carried on. One or two speakers thou care committees were unnecessary, at least in ru areas, where the work could be better done by tuber losis officers and their assistants. A care commit would only duplicate the work, and it was sugges that the Ministry of Health should not be encoura to press these committees on all districts, irrespect of the local conditions.

MEDICO-LEGAL SOCIETY.

At a meeting of this Society held on Jan. 26th ir WILLIAM WILLCOX, the President, took the chair, nd Mr. F. LLEWELLYN-JONES read a paper on

)RUNKENNESS AND CIVIL AND CRIMINAL RESPONSIBILITY: A STUDY IN COMPARATIVE LAW.

[e reviewed the laws relating to civil and criminal esponsibility of intoxicated persons in different ountries, most of which corresponded with the nglish custom, as summarised in Lord Halsbury's Laws of England." The Code Napoléon had no ecific reference to the civil problem, but French urts had arrived at decisions which regarded the ery drunken man as insane; they had, however, ccepted no lesser state of inebriation as a reason for lieving him from his contract, unless the other party ad resorted to fraudulent devices to make him drunk. greements entered into in taverns might be annulled ithin 24 hours in France, and in Holland and Flanders ey were regarded as invalid unless ratified within 4 hours. Recent Austrian and German legislation ad enacted that if a man were made drunk through ickery, so that a wrong resulted, then the third party ho had made him drunk should be liable to the jured person.

Criminal Responsibility.

In the matter of criminal responsibility different ystems showed considerable divergence. The most portant case in English law was that of the Director Public Prosecutions *v.* Beard, which had come before e House of Lords in 1920. Lord Birkenhead, livering judgment, had referred to a sixteenth ntury ruling which said that if a person drunk kills nother he shall be hanged for it; inasmuch as that ndition arose from his own act and folly he shall ot be privileged thereby. Hook and Blackstone in e two succeeding centuries had ratified this, but dicial decrees since the early nineteenth century owed that the rigidity of the rule had been gradually laxed. Lord Birkenhead had pointed out that the w took no heed of the cause of insanity; if alcohol used insanity in the legal sense then the patient had complete an answer to a charge as the sufferer from y other form of insanity, however temporary his ndition. Drunkenness, however, was no defence nless there was evidence that the accused was so unk that he was incapable of forming the specific tent necessary to the committal of a crime. If the idence merely established that his mind was so fected by drink that he gave way the more readily an impulse, then that would not rebut the assumption that he intended the consequences of his act. n Australian court had recently quashed a conviction, lding that there was no animus gerendi, since the cused had been too drunk to know what he was ing.

The Indian Penal Code differed from English law that the man drunk through his own fault was no tter off than the sober man. The laws of the nited States corresponded more or less closely with e principles laid down in the case of Beard. Before e French Penal Code was drawn up drunkenness had tually been regarded as an aggravation of an offence, d the man had been punished for two evils—the use and the result. For a long time in France unkenness could not be pleaded as excuse or in itigation of an offence, but milder views had adually gained ground. The German Code classified unkenness in two ways: first the circumstances der which the person became drunk—i.e., voluntrily; fraudulently, making himself intoxicated in der to facilitate a crime; or accidentally, due to the ickery of another party. Secondly, it recognised ages of drunkenness; first where the continuity consciousness was retained; secondly, where nsciousness remained but the mind was so clouded at mistakes were committed; and thirdly, complete toxication depriving a man of his reason. In the st stage he was always responsible for his acts; the second stage was rarely free from imputability, and then only if he were "accidentally" drunk. In the third stage he was hardly every held responsible. Intoxication might be urged in mitigation if it were accidental or voluntary. In Hungary a man might be acquitted if "dead" drunk, or might plead it in mitigation if his intoxication were less complete. If he had taken drink to nerve himself for his crime it was regarded as an aggravation of the offence. Swiss law was much the same as German, but in Italy alone of any country was the chronic alcoholic sent to serve his sentence in a special establishment where he was treated for his condition. Drunkenness under the new Italian Code was neither to aggravate nor extenuate an offence, save in the case of drink taken to facilitate a crime or "accidental" intoxication. If a man made another drunk in order that he should commit a crime, the first man was to be punished in place of the delinquent.

The Drunken Motor-driver.

Nowadays few cases caused such difficulty as that of the drunken motorist. No definition of drunkenness had been given. The American Motor Vehicles Act, 1921, had gone a little further than English Law in stating that a vehicle driver was drunk if he were so much under the influence of intoxicating liquor as to be incapable of exercising effective control of such vehicle. Judge Sturges last year, at Windsor, had defined it as a condition where the skill and judgment normally required in manipulating a motor-car were obviously impaired as the direct result of alcohol.

Discussion.

Sir WILLIAM COLLINS said that there could be no definition; drunkenness was a matter of degree. It was comparable to the problem of when a calf became a cow, or a small heap a large heap. Witnesses should not be pressed for definition, called by John Hunter "of all things the most damnable."

Mr. ROLAND BURROWS said that the tort committed while in drink was a sphere wherein the theory of the law was wholly unworked out, as was also the case of insanity. While an insane person was certainly liable for some of his torts, it was quite impossible to pronounce upon others. A numbers of torts did not depend on a state of mind at all, and for these drunkenness ought not to affect liability. Criminal responsibility had been worked out at much greater length. There was reason to believe that, if the jury had been asked whether or not Beard had been drunk at the time of his offence, the answer would have been No. The judgment of Lord Birkenhead on this case had been the considered opinion of the House of Lords.

Mr. J. P. VALETTA wondered why some of the tests applied by doctors to persons accused of drunkenness did not seem to appeal to juries, although they impressed magistrates. He pointed out that a doctor was dragged out of bed at 3 A.M. to test a man at a time when even the most sober might not walk just as the doctor wished. Such tests ought not to be conclusive. The burden of establishing a standard of test rested on the medical profession, and he urged a reconsideration of the subject.

Mr. ROMAIN said that the law had deliberately avoided definition of drunkenness because it recognised different degrees. Before motor-cars became common the matter had hardly ever come before the courts.

Dr. MORGAN FINUCANE maintained that medical men had made real progress in this matter and cited Dr. Godfrey Carter's work on urine analysis. In his opinion no man who drank alcohol ought to drive a car.

Mr. W. A. CHADWICK quoted two definitions of drunkenness. The first was the military one; if a drunken man was fit to do his job, then he was sober enough to do it. The second had been given him by his grandfather: "not drunk is he who from the floor can rise again and still drink more, but drunk is he who prostrate lies without the power to drink or rise."

Mr. R. BOLTON spoke of the individual differences in drunkenness. An experienced driver might have lost his road sense, but still be better than an unskilled driver sober, and the two were equally guilty for being on the road at all.

CAMBRIDGE MEDICAL SOCIETY.

A CLINICAL and pathological meeting of this Society was held on Jan. 13th at Addenbrooke's Hospital. Dr. H. B. RODERICK, the newly elected President, took the chair.

Treatment of Varicose Veins by Injection.

Dr. F. A. HEPWORTH (Saffron Walden) described his experience of the treatment of varicose veins by the injection of a solution of sodium salicylate into the veins. The advantages of this method, he said, were that it could be used without difficulty in private practice, that the apparatus was very simple, and that the patients were able to continue their work during treatment and did not have to lie up at all. He used the following apparatus: a glass syringe with an eccentric nozzle to fit a short, fine needle, two sterile solutions of 20 and 30 per cent. sodium salicylate, and iodine and swabs for cleansing the skin over the veins. His method was as follows. The patient sits on a high couch, with the legs hanging over the edge, the skin over the most prominent veins is swabbed with iodine, and the needle is inserted obliquely into the chosen vein; a small amount of blood is withdrawn into the syringe before injecting the salicylate solution so as to ensure that the needle is in the lumen of the vein; 2 c.cm. of the solution are then injected slowly and the needle withdrawn. Dr. Hepworth said that he was accustomed to inject patients once a week, doing four veins at a sitting. He used the 20 per cent. solution the first time and the 30 per cent. subsequently. He emphasised the importance of injecting the solution into the vein, any leak into the surrounding tissues being liable to cause severe pain and ulceration, which would only heal with difficulty. The treatment should not be given if there was evidence of thrombosis of the deep veins of the leg. If it was properly carried out a slight tingling was the only sensation felt by the patient, who might be allowed to walk out of the house five minutes later. He showed two patients as examples of those he had treated and cured of symptoms by this method.

The PRESIDENT said that he had not tried injections for varicose veins, but in the treatment of hæmorrhoids he had used injections of urethane and quinine with success. This method was specially valuable when insufficiency of hospital beds prevented a more radical cure.

Dr. W. G. NASH (Bedford) had treated six cases of varicose veins with injections of quinine and urethane; no pain or discomfort had been caused, and the results were very satisfactory.

Demonstrations and Cases.

The PRESIDENT showed three pathological kidneys which he had recently removed. One was that of a man aged 60, who suddenly developed profuse but painless hæmaturia, which persisted for a week. A radiogram showed a faint shadow in a very large kidney, which on account of the continual hæmorrhage was removed. It proved to be a classical example of polycystic disease of the kidney with a concretion in the substance of the lower pole which had been shown by a faint shadow in the X ray. The patient had no symptoms after convalescence.

Dr. G. S. HAYNES showed a child on whom Mr. W. H. Bowen had performed Rammstedt's operation for congenital pyloric obstruction ten months previously. The child was in good health and weighed 25 lb.

Dr. FFRANGCON ROBERTS showed a radiogram of the skull of a patient in whom right facial paralysis had developed after a blow on the head, caused by a fall on wet leaves. The lateral view showed a horizontal crack involving the squamous and petrous portions of the temporal bone. A second radiogram, taken from above, behind and slightly to the left, to show the inner petrous bone, showed a second crack leading from the first down to t stylo-mastoid foramen.

Mr. W. H. BOWEN said that an interesting poi about the case was that the man only sought medic advice 19 days after the accident, and then only f the facial paresis, for he had had no other symptom

Dr. C. H. WHITTLE showed the heart and aor of a man of 20, who had died suddenly while ridi a bicycle. There had been no premonitory symptor or previous history of over-exertion. The hea which weighed 24 oz., showed enormous muscul hypertrophy, especially in the walls of the ventricl Microscopically the muscle appeared quite health The only other abnormalities in the body were a ve slight decrease from normal in the lumen of t aorta, and a thymus, which weighed 28 g. D Whittle said a number of such cases had been describe chiefly in America, but nothing was known as to t true cause of the condition or the reason for deat He also showed a specimen of a liver taken from child who died at the age of 5 months as a result congenital absence of the gall-bladder.

Dr. J. R. C. CANNEY described a case of acromega of which Dr. Roberts showed radiograms; Mr. Bow showed a case of spina bifida; Mr. A. S. H. WALFO demonstrated epithelioma of tonsil and gumma the turbinate bone; and Dr. W. R. GROVE (St. Iv showed a heart with gummatous pericarditis.

MEDICO-CHIRURGICAL SOCIETY OF EDINBURGH.

A MEETING of this Society was held on Jan. 18t when Dr. A. LOGAN TURNER, the President, took t chair, and Dr. CHALMERS WATSON read a paper on

Unrecognised Toxic Substances in Human Fæces.

This paper was published in THE LANCET of Jan. 28 (p. 174) and included the results of experiments Dr. P. De on the effect of injecting into cats a seri of extracts from human and animal fæces. T following is a summary of the discussion which followe

Prof. A. J. CLARK said he had followed the expe ments with interest. The bowel was the "unkno continent" of the body, and its pathology had be less explored than that of other organs. The liv was not the perfect guardian to absorption that it w supposed to be; it often failed to defend the bo against toxic substances, and a small difference the material might make an enormous difference absorption. It was wrong to assume that because one particular kind of intestine toxins did no har they did not do so in others. Our knowledge of t liver, said Prof. Clark, was absurdly scant, and it w very necessary that more work should be done absorption from the colon and its influence on disea

Prof. G. M. ROBERTSON thought it very difficult say, from the clinical point of view, to what extent t symptoms of mental diseases were due to intestin toxæmia and to what extent the disturbances of t intestines were a sequel to mental disorder. He h often questioned intelligent patients as to whetl their mental disorder—e.g., melancholia—or th gastro-intestinal condition had come first. Most them believed that the mental symptoms preceded t intestinal. This might easily be accounted for by t melancholic state, with its loss of appetite a digestive interest in general, causing retardation alimentary movement with consequent constipati and putrefaction.

Dr. STANLEY DAVIDSON laid stress on the importa of the hydrogen-ion concentration in the bow especially in cases of pernicious anæmia, wh intestinal bacteria were more numerous than any other condition he had seen. Team-work w essential if the subject was to be considered from points of view.

Dr. A. GOODALL and Dr. R. A. FLEMING also to part in the discussion.

Dr. WATSON, in reply, referred to Dr. Davidso remarks on the necessity for team-work, and remark

hat in the recent monograph on Toxæmia of Pregnancy ublished by the Medical Research Council there were 20 pages discussing 200 cases and 40 controls, yet nly three lines were devoted to auto-infection and bout 15 to auto-intoxication. No mention was made f the condition of the urine or stools along the lines) which he had referred.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

SECTION OF MEDICINE.

AT a meeting of this Section held on Jan. 20th,)r. G. E. NESBITT, the President, in the chair, a paper ntitled

The Sensitive Child

'as read by Dr. B. D. CRICHTON, who pointed out that very sensitive disposition might produce syndromes apable of being mistaken for the symptoms of disease. Iuch depended on the wisdom of those in charge of ich children, for abnormal behaviour in a sensitive hild was often due to the follies or neuroses of the arent or nurse. Sympathetic handling was essential, nd encouragement rather than repression was the lue to managing most of the problems of difficult hildren. Many children laboured under the disdvantage of being forced to attend a school where ducation was carried out in surroundings and under onditions which were prejudicial to good health, nd Dr. Crichton urged that medical men in Dublin hould unite to make educational authorities see the arm done by the present system. In the Dublin chools the working hours were long, the lunch interval 'as badly chosen, lavatory accommodation was efective, and medical inspection wanting.

Dr. M. F. O'HEA agreed that the sensitive child 'as a definite entity. He felt that to try to make hildren plucky by holding up to them the pluck of ther children was a great mistake. The best time or the principal meal was at present a vexed question ; ome schools insisted that the children should have inner at 1 o'clock, and stopped school from 1 to 2 or this purpose. This he thought bad for the hildren's digestion, as it meant that they had to eat heir meal too hurriedly.

Dr. V. M. SYNGE considered that children went to chool far too young and learnt too many things by outine instead of reasoning them out. The so-called ncrease of education in Ireland by compulsory ttendance at the national schools was not an unmixed lessing. He had seen children in quite an advanced tage of tuberculosis who were sent to school every ay, as their parents were afraid of being fined if they id not send them. The national schools were far too rowded ; in many of them there were 150 children n about three rooms, with only three teachers.

Dr. N. FALKINER asked if most of the children seen y Dr. Crichton had had some definite organic lesion ; ad their diet been faulty, and had the majority of hem been breast-fed ? If undue sensitiveness was ssociated with artificial feeding it should be more ommon in private practice than at hospital.

Dr. R. J. ROWLETTE, referring to the necessity for n altered school hygiene, said it was a pity that the nforcement of attendance at schools should have nticipated the establishment of a proper system of edical inspection. Whilst individual attention was ecessary for the diagnosis of the sensitive child's ondition, he thought it might be carried too far in reatment. If individual attention was unduly ressed it might lead to the child concentrating on self, which was unhealthy.

Dr. LEONARD ABRAHAMSON agreed with Dr. richton that one of the greatest difficulties in ealing with the nervous child was the comparatively nknown factor represented by the nurse who was nterposed between parents and child. In some cases was as necessary to study the parents and the nurse s it was to understand the child. School hours were ertainly too long, and he thought it unfair that the ours should be longer in national schools than in rivate schools.

The PRESIDENT said he could not imagine anything worse than a child who was *not* sensitive, or an adult either. He thought Dr. Crichton should have called his paper The Supersensitive Child. Undoubtedly one of the most important influences in the bringing-up of children was the nurse ; another important factor was heredity, which played a great part in the sensitiveness of children. Nowadays, in cases of extreme naughtiness, the question of encephalitis lethargica was worth considering, for children who had suffered from this disease, even slightly, were liable for some time afterwards to be naughty purposely.

Mr. W. C. MCFETRIDGE and Sir JOHN MOORE also joined in the discussion.

Dr. CRICHTON, in reply, said that when talking about sensitive children he had really meant super-sensitive children. The average child wanted to be constantly doing something, and he thought that care should be taken to study its favourite pastimes and habits. The education of nurses for small children had not really been given enough thought. It must be borne in mind, however, that nurses were rather born than made. The child's heredity was exceedingly important, but it was equally difficult to tell the parents the trouble. He believed that not enough interest was taken in the teaching of children ; the preparatory school was more important even than the public school, as in the first five years a boy could be either made or marred. He had not found much difference between breast-fed and bottle-fed children. By overtreatment a child could, of course, be made more sensitive. He thought that the principal meal should be between 1 and 1.30 o'clock, and not as late as 2 or 3. The interval allowed at most schools in the middle of the morning was too short.

Dr. J. H. POLLOCK read a paper entitled

A Case of Psychoneurosis.

In describing the clinical history in psychoneurosis it was important, he said, to pay attention to the time-factor. In the case he reported the psychical disturbances came on first some considerable time after the shock to which they were due, and aroused buried fears dating back to a much earlier period. It was also important to remember that recovery was bound to be slow, and attempts to hurry the process were comparable to "meddlesome midwifery." Simple analysis might help the physician to understand the details of his case, but it was a grave mistake to interest the patient in the process or present it to him as a means of treatment. The psychoneurotic tended to be subjectively-minded, and the aim of treatment should be to make him objectively-minded.

The PRESIDENT, after pointing out that repression was now admitted to be one of the most important factors in mental upset, went on to discuss the endocrine basis of these disturbances. More attention should be given to the relation of psychoneurosis to the ductless glands.

Dr. ABRAHAMSON considered that cases of psychoneurosis could only be investigated with difficul y in general practice and should not be dealt with except by a man who had time to go into them thoroughly. He referred to a mental patient whom he had recently seen. She had had a motor accident, had fractured her skull, and had been trephined ; shortly afterwards she was certified as definitely insane. In conversation the patient constantly spoke of numbers and also of colours, and Dr. Abrahamson had ascertained that just before the accident her eyesight had been tested, and she was being attended by nuns who wore black and white.

Dr. ROWLETTE said that in these cases what was most important was not classification in regard to treatment, but in regard to prognosis. The question was when should the line of certification be drawn ? Many of these patients became seriously depressed, and it was in the depressed patient who was not actually insane that there was the greatest danger of suicide. The condition often arose out of a long-standing conflict, generally between one of the primal motives in human beings on the one hand and moral

restraint on the other. People often took refuge in drugs as a method of preventing loss of self-control. In all these conditions both the mental and the physical substructure had to be considered, and it was impossible in any case to separate one from the other completely.

Dr. O'HEA thought that cases of severe neurasthenia were not nearly so common now as in the previous decade. Dr. T. M. CORBET, Dr. R. H. MICKS, and Dr. R. S. STEEN also spoke, and Dr. POLLOCK replied.

A Case of Bronchiectasis.

Dr. ABRAHAMSON showed a child aged 4 with fibrosis of the left lung and left-sided bronchiectasis.

The patient had been seen by him for the first time on June 15th, 1927, and the only history was one of recurrent attacks of cough with sputum. Examination showed some cyanosis of lips and cheeks and clubbing of the fingers. There was diffuse dullness over the left axilla and over the back of the left lung, whilst towards the base there was an area yielding signs of a cavity. A diagnosis of bronchiectasis was made and the patient was admitted to hospital. There it was noted that the cough occurred mainly in paroxysms, and that the sputum was fœtid. Vomiting followed some of the paroxysms. Radiography showed that the inner half of the left pulmonary field was obscured by a dense, almost homogeneous, shadow. Some comparatively translucent areas suggested cavitation. The outer half of the lung had a network of dense shadows, and the cardiac arteries were completely obscured. The radiographic appearances pointed to the presence of large bronchiectatic cavities, with extensive fibrosis. Radiograms were also taken after injection of lipiodol. The sputum was negative for tubercle bacilli, and culture yielded streptococci and pneumococci. Treatment was by creosote and vaccine, with tonics, and considerable improvement had taken place.

The PRESIDENT said that these cases caused a great deal of worry because they were usually shrouded in mystery, and it was exceedingly difficult to give a prognosis. He himself had an almost exactly similar case under his care.

The patient was a girl, aged 9, who began to run a high evening temperature ten days after having had tonsils and adenoids removed. She had now been in hospital for a couple of months. There was a definite area of dullness at the apex of the right lung, and a radiogram showed a dense shadow and a cavity containing fluid. The sputum had been examined several times with negative results. After a time the patient brought up a lot of foul sputum and got better for a week, but then relapsed again. A little later, however, she brought up pus and a lump of solid material, the size of a hen's egg. This turned out to be a blood-clot. Dr. Nesbitt thought that after this the girl would die, but next day there were obvious signs of a cavity and cavernous breathing. It was obvious that the girl had an abscess in the lung, and he thought that this must be caused by a foreign body.

The President said that this was the second case which had come under his care with a definite abscess of the lung, following the removal of tonsils and adenoids.

Dr. W. M. CROFTON referred to treatment by immunisation. In these cases tubercle bacilli were always looked for, but the possibility of any other organisms being present was usually overlooked.

Dr. ABRAHAMSON, in reply, said that as there was no history of an acute infection and no suggestion of inhalation of a foreign body he considered that the bronchiectasis was due to congenital weakness of the left bronchial tree in association with recurrent bronchitis. Thoracoplasty had been considered, but in view of the improvement was not contemplated at present. He was of opinion that in this case vaccines had been of material help.

DONCASTER ROYAL INFIRMARY.—Serious money difficulties have put a stop to the erection of the new building, which is intended to contain 300 beds. In October, 1926, the Prince of Wales laid the foundation-stone of the first three wards, which will contain 140 beds, but the depression in trade following the coal strike stopped the flow of money, and for more than a year the foundations have remained untouched. The infirmary is now so overcrowded that several patients are lying on mattresses on the floor, while some of the cots contain two children.

Reviews and Notices of Books

THE INFANCY OF MEDICINE.

By DAN MCKENZIE, M.D. Glasg., F.R.C.S.I., F.S.A. London: Macmillan and Co. 192[illegible]. Pp. 421. 15*s*.

THIS inquiry into the influence of folklore upon t[illegible] evolution of scientific medicine is, as might be expect[illegible] from its author, alike full of information and pleasa[illegible] writing. Dr. McKenzie expressly disclaims havi[illegible] written a history of medicine; rather he is describi[illegible] medical art in the making—"the shifting sands[illegible] in his own words, "of medical opinion and modes [illegible] thought as well as the record of outward and visi[illegible] happenings." The long and complex subject [illegible] treated in six stages—namely, the prehistor[illegible] including the savage epoch; the ancient epoch, whi[illegible] takes note of Egyptian, Babylonian, Persian, Buddh[illegible] medicine, and occasionally of ancient Chinese a[illegible] Japanese science; the classical epoch, covering Gre[illegible] Roman, and Arabian medicine; the mediæval epo[illegible] where the reference is to the Dark Ages and the Mid[illegible] Ages; a fifth epoch, termed pre-scientific or transition[illegible] bringing us to the beginning of the nineteenth centu[illegible] since which date all that happened is summarised [illegible] the scientific or modern epoch. In his preface [illegible] McKenzie apologises for these divisions as arbitra[illegible] but while it is true that they are not separated fr[illegible] one another by any clear line of demarcation they ma[illegible] an extremely convenient scheme for dealing coheren[illegible] with big and heterogeneous material.

Concerning the early evolution of the medical ma[illegible] which implies the separation of medicine from mys[illegible] cism, Dr. McKenzie writes on familiar lines—h[illegible] could it be otherwise? But the chapters on primiti[illegible] pathology and treatment will reveal to many read[illegible] who have no first-hand acquaintance with ethnolo[illegible] or its literature what were man's starting conceptio[illegible] of disease and what the parts played by belief [illegible] demoniac possession and magic, both of which t[illegible] author conceives to have had more influence th[illegible] any appreciation of natural causes. These sectio[illegible] constitute the first part of the book, and a glance at t[illegible] full and careful bibliography will show how well do[illegible] mented the author is and should help readers [illegible] follow in his footsteps.

In the second part individual methods of treatme[illegible] are taken up, the origin and history of various cree[illegible] and the employment of various drugs being discuss[illegible] the statements being again supported by voluminc[illegible] references. It should be useful that the author h[illegible] here attempted to follow up the ancient theories a[illegible] technique so as to correlate modern medical thoug[illegible] with the origins, many and curious, from which it h[illegible] evolved. But in respect of the evolution of anim[illegible] remedies the various revolting devices for relief a[illegible] cure which are described show how entirely t[illegible] intentions as well as the procedure of our forefath[illegible] were divorced from the researches that have led up [illegible] the recent introduction of animal products into c[illegible] therapeutics. Our laboratories owe nothing to th[illegible] coarse superstitions, and Dr. McKenzie issues [illegible] warning to this effect which is timely, for we [illegible] in the popular press the exact reverse stated, time a[illegible] again, in order to frame an argument against t[illegible] existence of medical progress. The evolution [illegible] botanical remedies, the influence of astrology [illegible] medicine, the history of balneology, and mu[illegible] piquant writing on superstitions in connexion wi[illegible] menstruation, impregnation, circumcision, and oth[illegible] mutilations, lead up to the stories of early operati[illegible] surgery, and of the practice of midwifery through t[illegible] ages. Thus Dr. McKenzie has made up a volume [illegible] absorbing interest to the historical student, while a[illegible] supplying information which is often exactly apt [illegible] the understanding of medical literature to-day.

The book is dedicated to the honour and glory [illegible] the author's Alma Mater, the University of Glasgo[illegible] for it constitutes the Prize Essay in the History [illegible] Medicine awarded in 1925 by that University.

YORRHŒA ALVEOLARIS.

By F. ST. J. STEADMAN, D.P.H., L.R.C.P., M.R.C.S., L.D.S., Dental Surgeon to the Royal Dental Hospital and West London Hospital. London: Henry Kimpton. 1927. Pp. 263. 25*s*.

THE term pyorrhœa alveolaris is admittedly a isleading and inaccurate one. But since there is name which correctly describes the salient features the various conditions to which this name is plied, few can complain of its use as a convenient le for those diseases which affect the gum and riodontal membrane. This book includes ætiology, thology, symptoms, sequelæ, and treatment. Mr. eadman recognises three types of pyorrhœa, the rm carbohydrate-stagnation type, the atrophic pe, and ulcerative gingivitis. We doubt if the clusion of this last condition is legitimate. It is acute condition, of specific causation, and if ated, of brief duration. Clinically and ætiologically is entirely different from the chronic conditions noted by the term pyorrhœa. Mr. Steadman vs great stress on the rôle of carbohydrate stagnan in causing a marginal gingivitis, which may later d to definite infection of the periodontal membrane. at this may be one of the factors concerned seems obable, but the author surely makes too much of

When he says that pyorrhœa is essentially a ease of childhood, apparently on the grounds that ngivitis is common in childhood, we cannot follow n. Not every case of gingivitis develops into pyorœa and it is not universally accepted that pyorrhœa vays begins as a marginal gingivitis. Mr. Steadman ers but little explanation as to the causes of the ophic type. Injury, blood-borne infection, and umatic occlusion are mentioned, but it is obvious at the ætiology of this condition is obscure. The apter on pathology is disappointing. There is mention of the work of B. Gottlieb, and the earches of H. K. Box do not receive adequate tice. The changes in the pulp which almost ariably accompany periodontal disease are not scribed. The few pages of physical signs and mptoms are equally meagre. The account of bacteriology of pyorrhœa is better, but even e the important work of J. Kritchevsky and Séguin on the possible rôle of *B. fusiformis* d *S. vincenti* in pyorrhœa is ignored. The largest tion in the book is devoted to the systemic comcations which may follow from dental sepsis. . Steadman casts his net widely and includes most every disease which at one time or another s been related to pyorrhœa, on the grounds of its provement following the treatment of the teeth. adopts the rather unusual proceeding of giving brief account of the symptoms of many of these eases. This increases the size of the book, which a disadvantage, and, moreover, may give the dent the fallacious impression that insanity, rthema nodosum, cancer, asthma, glycosuria, and forth are specifically due to dental sepsis, though is is certainly not the author's aim. The section treatment is detailed and embodies many useful nts. It is the best part of a book which, in spite its defects, contains many shrewd reflections and ch sound advice. The illustrations are numerous d excellent, especially the coloured plates.

THORACOSCOPY.

Lehrbuch und Atlas der Laparo- und Thorakoskopie. By Dr. ROGER KORBSCH. München: J. F. Lehmanns Verlag. 1927. Pp. 74. M.12.

ENDOSCOPIC methods for the examination of the peritoneal and thoracic cavities have not made such headway in this country as they have on the Continent. Dr. Korbsch has evidently devoted a great deal of attention to their study, and he has condensed into this volume a large amount of information as to the technique used and the results which may be expected. The book is illustrated by a series of coloured plates, beautifully drawn and produced, which show the various appearances very clearly.

DICTIONARY OF NATIONAL BIOGRAPHY.

1901–1911. Three volumes, bound together. Pp. 644, 669, 739. 21*s*. 1912–1921. One volume. Pp. 623. Same price. London: Humphrey Milford, Oxford University Press.

THE Dictionary of National Biography was planned originally to end at the close of the nineteenth century, but was extended so as to contain the biographies of noteworthy persons who had died before Jan. 22nd, 1901, that being the day of Queen Victoria's death. Two Supplements were issued later by Messrs. Smith Elder and Co., whose senior partner Mr. George Smith, had devised the wonderful scheme. Each of these Supplements was in three volumes, and in format similar to the well-known series; the first Supplement contained the lives of those who had died up to the day of Queen Victoria's death and were for one reason or another not included in the original volumes; while the second contained the lives of those who had died between that date and the end of 1911, the three volumes comprising 1660 lives. This second Supplement was edited by Sir Sidney Lee, with the assistance of Mr. W. B. Owen and Mr. G. S. Woods, and was issued in accordance with the determination to continue one of the most valuable works of reference in the world by regular decennial issues. The firm of Smith Elder and Co. having been dissolved in 1916, the heir to Mr. George Smith, the founder of the Dictionary, presented the stock and copyright to the University of Oxford. Hence the Oxford University Press is now publishing the two volumes under review, the first volume (1901–11) being a reprint on thin paper of the original second Supplement, while the second volume (1912–21) is the next decennial issue. This is edited by Mr. H. W. C. Davis and Mr. J. R. H. Weaver, contains a composite index covering both decennial periods, and has for its appropriate preface a full memoir of Sir Sidney Lee. This memoir is extremely interesting not only as recording the life of a noteworthy man of letters, but as containing in brief the story of the evolution of the Dictionary. Thus we see how remarkably the great design of Mr. George Smith was carried out by the first editor, Leslie Stephen, in coöperation with the first sub-editor, Sidney Lee; we obtain insight into the way in which the ideals of George Smith, Leslie Stephen, and Sidney Lee were carried out in a composite scheme, with necessary modifications but with no abatement of the high standard determined upon. The arrangements for production and systematisation of the output, and the precautions taken to secure uniformity in quality and fitness between the subject selected and the space allotted are set out, and the following interesting piece of information is quoted from Leslie Stephen himself in justification of the inclusion of the less celebrated:—

> "The judicious critic is well aware that it is not upon the lives of the great men that the value of the book really depends. It is the second-rate people—the people whose lives have to be reconstructed from obituary notices or from posthumous works; or sometimes painfully dug out of collections of manuscripts; and who really become generally accessible through the Dictionary alone—that provide the really useful reading. Nobody need look at Addison or Byron or Milton in a dictionary. He can find fuller and better notices in any library; and the biographer must be satisfied if he has put together a useful compendium of all the relevant literature."

The volume 1901–11 includes the names among others of the following distinguished members of the medical profession: Thomas Annandale, William Mitchell Banks, Lionel Beale, Charles Beevor, G. F. Blandford, William Broadbent, H. H. Clutton, Joseph Fayrer, William Tennant Gairdner, Alfred Garrod, Samuel Gee, Luther Holden, Timothy Holmes, Hughlings Jackson, J. W. Ogle, F. W. Pavy, J. F. Payne, Vivian Poore, Sydney Ringer, Argyll Robertson, T. D. Savill, Edward Sieveking, Charles Bell Taylor, Thomas Henry Wakley, and Thomas Wakley, jun. In this list it may be that only one name will go down to posterity as a pioneer—one to whose exploratory work the solid annexations of the future are due—but every name for years to come

may find its place in medical references, thus making the student appreciative of the details supplied by the dictionary. The notices of Thomas Henry Wakley and Thomas Wakley, the son and grandson respectively of the founder of THE LANCET, both of whom succeeded to the editorial chair, are sympathetic.

The volume (1912–21) covers, of course, the four and a half years of the European war, and among the many national losses during that terrible epoch we find chronicled the names of Victor Horsley and Elsie Inglis. For the rest the list includes those famous persons Elizabeth Garrett Anderson, Sophia Jex Blake, William Osler, and the great Lister. Other names to be recalled to memory are Lauder Brunton, Henry Butlin, Thomas R. Fraser, William Gowers, Jonathan Hutchinson, Leander Starr Jameson, Wickham Legg, Edward Nettleship, William Henry Power, Felix Semon, Anthony Traill, William Turner, E. Adrian Wilson, and Charles Wyndham, a curiously interesting list because of their very varied claims to well-earned fame—claims which are so recent as to need no recalling. In this volume will be found also many names which will always be associated with the development of our profession; for example, we have biographies of two great chemists, William Ramsay and Henry Roscoe, Russel Wallace the contemporary discoverer with Darwin of fundamental truths in evolution, Adam Sedgwick the biologist, and Robert Morant, to whose personal energies and sympathy it was largely due that the profession of medicine obtained its measure of recognition under the National Insurance Acts. The volume (1912–21) is, as will be seen, very much shorter than its predecessor, and is planned on less ample lines than the older of the supplements published by Messrs. Smith Elder and Co. under the editorship of Sir Sidney Lee. It was seen that if a similar policy of selection had to be pursued throughout the present century the result would be to add about 15,000 lives (and nearly 20,000 pages of print) to the main work. The editors have therefore reduced the average length of the articles and have no doubt been more strict in the admissions to the national roll. There is one obvious justification for such a policy—namely, that in the second quarter of the twentieth century books of reference containing biographical details and small individual biographies abound. It is extremely unlikely that the historian of the future, considering the mass of contemporary material finding its way into print, could ever be at a loss for any really necessary information about anybody, where that information was of national importance.

POPULAR PHYSIOLOGY.

Living Machinery. By A. V. HILL, M.A., Sc.D., F.R.S., Foulerton Research Professor of the Royal Society. London: G. Bell and Sons, Ltd. 1927. Pp. 256. 7*s.* 6*d.*

THOSE who attended the Christmas lectures for young people at the Royal Institution last year will remember how skilfully and amusingly Prof. A. V. Hill elucidated the nature and function of nerve and muscle. It takes something very like genius to explain in non-technical language the nature of a conditioned reflex or the process of carbohydrate metabolism, and Prof. Hill has in addition to this power a charming and easy style. The six lectures here printed are on nerves and the messages they carry; muscles and how they move; the heart; the lungs and circulation, which supply the muscles with air and fuel; the way in which nerves and muscles work together, and the physiological bases of speed, strength, and endocrines. Besides many diagrams and illustrations in the text, the book also contains 24 excellent plates. Most laymen know very little about their bodies, and it is mainly for their information that such popular works as this are published. Probably many medical men may find that they know more after reading these lectures than they did before; at any rate, they will wish that all their scientific knowledge could have come to them in such a palatable form.

FRACTURES OF THE NECK OF THE FEMUR.

Le traitement des fractures du col du fém
By JACQUES LEVEUF and CH. GIRODE. Pa
Masson et Cie. 1927. Pp. 148. Fr.30.

THIS is a description of Prof. Pierre Delbet's w
on the treatment of fractures of the neck of the fe
and is an extremely interesting record of his meth
and results. The authors show that a metallic sc
is useful in younger patients and that a living autog
of bone leads to good results in a large percentag
older people. The description of the details of th
operations is a revelation of logical thought
inventiveness, not always brought to bear upon s
problems. The technique is complicated and prec
obviously demanding skill, great care, and experie
but the results indicate that its acquisition is
worth time and trouble.

METHODS OF RACIAL STUDY.

Rassen-Forschung. Von Dr. WALTER SCHEI
Privatdozent für Anthropologie an der Universi
Hamburg. Leipzig: George Thieme. 19
Pp. 80. M.5.80.

THIS little book is designed as an element
introduction to the methods to be used in racial stud
especially such studies as, starting from the gen
laws and theories of race, describe the race biol
of some given population. The introduction gi
a warning against the over-estimation of the techni
of measurement and description without adequ
knowledge of the subject matter of anthropolo
and insists on the importance of plan and hypoth
in research—of putting a definite question rat
than being content with an aimless presentation
facts, and of connecting local differences of bod
characteristics with definite national and gen
cultural manifestations.

Section I. deals with the choice and sifting of
material to be studied, and points out common err
Biased errors, such as taking a non-representat
sample, cannot be remedied simply by study
larger numbers. The tendency of any obser
again, is to lay stress on the unusual rather than
typical, such exceptions often being made fami
by their reproduction as so-called "national type
in popular pictures and postcards. No amo
of skill in computation can compensate for systema
errors in the collection of material. The choice
grouping of the characteristics to be recorded rece
careful consideration. The second section de
with elementary statistical methods, and the consta
used in the description and comparison of m
observations. The author has an unfortunate pre
ence for the mean variation over the standard de
tion, and for Lenz's approximate methods of corr
tion and regression over the more exact and commo
used product moment method. His objection
biological work to constants based on least squ
methods as putting too much weight on outly
observations does not seem to outweigh the adv
tages of the latter. These, as Prof. Karl Pearson
pointed out, are a smaller sampling error, a uni
value, and a definite meaning not limited (as
Lenz's Deutscher Korrelations-index and its deri
regression) to the case of normal distributions. Mi
defects in this section, and also in the appen
are several misprints that might mislead a beginn
a four-fold table, such as that on p. 45, in wh
one of the alternative groups to be again divi
only contains five observations, is of little value
ill-chosen as an example. References also are
complete—e.g., Mollison's formula for a type differe
is not a familiar one, but no reference as to its ori
is given.

The notes on statistical methods in the recen
published report of the British Association Commit
on biological measurements (Section D, Leeds, 19
are to be preferred. This useful little report cov
in a less detailed way most of the points discus
in Dr. Scheidt's book in their general application
biological work.

THE LANCET.

LONDON: SATURDAY, FEBRUARY 4, 1928.

THE ALLEVIATION OF DEAFNESS.

DEAFNESS is a widespread and disabling affliction, and in a large number of cases it is at present little amenable to treatment; there is, therefore, small cause for surprise that any claim for a new method of treatment as giving successful results should be widely quoted in the lay press and should arouse the interest and hopes of a large number of sufferers. This has been the fate of an article by Major V. NESFIELD,[1] recently published in our columns; so irrelevant and unjustified have been some of the comments that a brief review of the treatment of chronic deafness may be useful in the endeavour to get the subject into proper focus. Such a summary of what is known will not obtain the publicity secured by the surmises, but we feel that our readers, despite its elementary nature, may find in it counsel that will be useful to their patients.

Chronic deafness is due to various causes, which may be classified shortly in two groups: those resulting from impairment of the apparatus of perception or of the nerve-paths thence to the brain—these may be called "nerve-deafness"; and those caused by interference with the transmission of sound-vibrations through the tympanum, or "middle-ear deafness." This latter group contains three main subdivisions, the results respectively of suppuration in the tympanum, otosclerosis, and chronic middle-ear catarrh. Regarding these various forms, we cannot expect that treatment of the tympanum will do good in nerve-deafness. In otosclerosis the essential lesion is the growth of new spongy bone in the neighbourhood of the fenestræ and elsewhere in the capsule of the labyrinth; here in view of the small size and inaccessibility of the parts concerned, and of the progressive character of the lesions, surgical interference is likely to do more harm than good. In active aural suppuration timely surgical treatment is of the greatest value in curing the disease and, of course, in improving the hearing; cases of healed suppuration left with a perforation of the drum already have the tympanum open to the air, and offer no opportunity for an operation designed to give an artificial opening into the auditory cleft. The problem of healed suppuration with an intact membrane approximates to that of chronic middle-ear catarrh. This last affection is the cause of a considerable proportion of all cases of chronic deafness which are variously described under such titles as chronic adhesive catarrh, or chronic hypertrophic and hyperplastic otitis media; the essential pathology is the production of new tissue-elements in the mucosa of the tympanum and Eustachian tube, resulting in thickening, contraction, and adhesions. Inflammation has spread from the upper air passages along the tube, and the degree of deafness which it causes will depend largely on the situation of the lesions, being most severe when the fibrous changes affect the region of the fenestræ. While the thickening of the mucosa is localised principally to the Eustachian tube, restoration of its patency by catheter and bougie has a good result; but when intratympanic fibrosis has reached a high grade, treatment of the Eustachian tube has little or no effect; indeed, at a late stage, secondary atrophic changes have often restored the patency of the tube, while the internal ear is liable to become involved, as is shown by the diminution of bone-conduction. It is in this class of case, where none of the usual methods of treatment is of any avail, that various operations have been tried, mostly with the idea of admitting air to the auditory cleft, in remedy of the effect of the closure of the Eustachian tube. It must, however, be apparent, from the considerations just mentioned, that such operations can only be expected to do good when the fenestræ are not occluded by fibrosis or bony deposits, and when the internal ear is not severely involved. On the other hand, when the hearing is not improved by restoring the patency of the Eustachian tube, it is probable that intratympanic fibrosis has already occurred. It would therefore appear, on *a priori* grounds, that operative interference will be useless when the Eustachian tube is patent, and unnecessary when its patency can be directly restored, and that it can be indicated only in those rare cases where there is an impermeable stricture of the tube.

POLITZER,[2] we may recall, has stated that attempts to restore the hearing by excision of part of the membrana tympani date back to the end of the seventeenth century; they were revived, early in the nineteenth century, by HIMLEY and ASTLEY COOPER independently, but it was not long before these two operators became convinced that good results were only temporary. POLITZER maintained, and this seems obvious, that operation can only be successful if the membrane of the round window is not thickened and if there is no labyrinthine complication; he held that no improvement can be expected when perception through the cranial bones is diminished. At the Sixth International Otological Congress, held in London in 1899, Dr. ARISTIDE MALHERBE, of Paris, read a paper claiming good results from an operation in which he scooped out the mastoid down to the antrum, cut a flap in the posterior meatal wall, and kept the communication between meatus and antrum open by means of a celluloid tube. He had operated on some 60 cases, but was careful to insist that not all cases of chronic deafness were amenable to surgical treatment, and that it was indispensable to examine the patient in a systematic manner, operation being essayed only if the perception for acoumeter and deep-toned tuning-fork was not much reduced, nor the bone-conduction for the deep fork, while loss of high notes was extremely unfavourable. In spite of these very proper cautions, his procedure has fallen into the limbo of forgotten things; all surgeons are not so ultra-conservative as to refuse to try new methods, and it is fair to assume that the operation has not survived because the results did not justify its performance. It is unfortunate that a committee, appointed in Paris to inquire into his results, was discharged without having been given adequate material on which to reach a conclusion; had a number of good results been available, it is to be presumed that they would have been brought before this committee.

Major NESFIELD'S operation is planned on lines very similar to Dr. MALHERBE'S, except that he does not keep in a tube to maintain the artificial opening for more than 48 hours, and that he sinks a comparatively narrow shaft through the bone to the antrum. Those with experience in aural surgery

[1] THE LANCET, 1927, ii., 1338.

[2] Politzer's Diseases of the Ear, sixth edition, edited by M. J. Ballin. London, 1926.

know how difficult it is to obtain a sound epithelial lining to a narrow cavity in the bone, and to maintain its patency, and some remarks in our correspondence columns show that Major NESFIELD'S opening does not always remain. In his short paper he does not mention the preliminary examination on which Dr. MALHERBE insisted, and, as he has operated on patients from the ages of 4 to 70 years, it is probable that his patients include sufferers from a variety of different conditions. It is to be expected, therefore, that Major NESFIELD will supplement his paper by an analysis of his results, both as regards the hearing and the patency of the new opening, with a full description of hearing tests before and after operation in a considerable number of patients. If in this way the new evidence justifies the proceeding, it would be well that an independent committee should be formed to examine and report on a series of the cases; there should be no difficulty in obtaining the coöperation of an expert body if the circumstances reveal a need for inquiry.

PSYCHONEUROSES AND INDUSTRY.

EDUCATIONAL tests are partly tests of intelligence, but their results throw no light upon intelligence unaffected by the results of education. Hence it has been the aim of psychologists to devise tests which would measure intelligence irrespective of educational influence, and such tests have been sufficiently perfected to be reliable in educational and vocational guidance. Happiness and efficiency, however, depend upon other factors besides education and intelligence. Among these physical health comes first, and the health of aspirants to particular callings is rightly made a subject of investigation; but there is also a numerically serious group of disabilities which arise from difficulties of mental adjustment to conditions of work and apparently depend upon qualities that hitherto have not been detected either by psychological or medical examination. In his paper on the incidence of the minor psychoses, printed elsewhere in this issue, Dr. MILLAIS CULPIN shows that in some establishments there is a serious loss of time through sickness which appears under such headings as nervous debility, nervous breakdown, or cardiac and nervous strain; in other establishments these illnesses are almost or quite absent, whilst in others again they are concealed under such diagnoses as dysmenorrhœa, anæmia, or gastric disorder.

The work he describes had begun as an investigation into telegraphists' cramp, most of the sufferers from which also presented severe psychoneurotic symptoms. Non-cramp controls, however, revealed a surprising number of men and women with similar symptoms, and it was decided to examine people in other employments in order to ascertain what proportion of the general population suffered from psychoneurotic symptoms that might be reflected in sickness-rates. The proportions varied somewhat in different occupations, but the effect upon sick-rates bore no relation to these proportions. Laundry workers, for example, in whom psychoneurotic illness was practically unknown, showed little difference from clerical workers in the incidence of what Dr. CULPIN calls latent minor psychoses. Some factor besides this latent tendency must therefore determine the excessive sickness in some occupations, and here further research is required. The investigation has shown that in a single interview by a trained observer with voluntary subjects nervous symptoms can be elicited which have previously escaped the notice of their medical attendants and yet have great influence not only upon their happiness but their health and efficiency. Our conceptions of what constitutes "nervousness" in a patient have hitherto been rather vague, and if a student were invited to ascertain whether a patient suffered from nervous symptoms that might be significant for diagnostic purposes, he would be rather at a loss how to discover them. Although Dr. CULPIN does not point out its moral, yet the case of the art student who at the age of 19 had already undergone an operation for some form of visceroptosis, whilst suffering from obsessional symptoms which it is not the custom of medical men to seek for, suggests a relation between nervous symptoms and visceroptosis, whose possibility will never be elucidated until we learn to investigate the nervous symptoms. This case was cited to illustrate the curious observation that the McDougall-Schuster dotting test—used by Miss MAY SMITH in this investigation as a check upon the psychopathological findings—picks out obsessional subjects by the excellence of their performance.

That the psychological results are significant is also confirmed by Prof. MAJOR GREENWOOD'S statistical examination of the relation between them and the judgment formed by instructors concerning the capabilities of learners at telegraphy. Although the investigators had set out only with the aim of discovering whether it might be possible to detect beginners who would later become subject to cramp, yet their results were in fair accord with the opinions of the instructors, formed after several months of observation, concerning the present ability of these young people. This indicates that by their methods it may be possible to select those learners who are likely to become efficient and thus to supplement present methods of vocational selection and guidance. It is to be noted that the methods measure neither education nor intelligence, but temperamental reactions, and that in this lies their novelty as applied to vocational selection. The ramifications of this research seem widespread, but at present its most important aim is the investigation of the modern plague of "nerves" as it affects sickness-rates in industry. That it has been undertaken by the Industrial Fatigue Research Board is a recognition of its importance.

HEALTH AT SCHOOL: THE DOCTOR AND THE TEACHER.

IT is now 20 years since the medical inspection of school-children was made compulsory by Act of Parliament. The Circular of the Board of Education issued when the Administrative Provisions Act of 1907 came into force, emphasised the fact that the new legislation aimed not merely at a physical survey or record of defects but at the physical improvement—with its natural corollary, mental and moral improvement—of coming generations. Justification for this policy was to be found, not in terms of money, but in decrease of sickness and incapacity among children and in the ultimate decrease of inefficiency and poverty in after-life arising from physical disabilities. During this period of 20 years the reports of the chief medical officer of the Board of Education have served as a sort of Domesday Book of the physical condition of the English child. We need not stay to point out here how and in what degree this condition has changed owing to the activity of the School Medical Service, but it may not be amiss to remind our readers that this Service had last year a medical and dental staff of 2362 practitioners with 4779 nurses at their disposal for part or the whole of their time. Put in a word or two, the fourfold aim of

the Service has been to fit the child to receive the education provided for it, to detect any departures from health, to discover and prevent the causes and conditions of defect and disease, and to teach and practise personal hygiene in every school. In the first three aims medical inspector, specialist, and nurse can not only initiate but largely carry through their task; the fourth and chiefest aim is only realisable through the coöperation of the teachers and indeed of the children themselves. It is for this reason that peculiar interest attaches to a handbook which has just been issued.[1]

This is a Manual on Health Education, complementary to the Handbook of Suggestions for Teachers, and intended to replace the Syllabus of Hygiene for the Training of Teachers. The handbook of 83 pages is divided into two parts, one containing subject matter for health practice and health talks for young children, the other containing outlines of health lessons for older children; and more than three-quarters of the book is taken up with detailed notes upon these lessons. Those who are sometimes tempted to doubt whether there is any considerable agreed body of teaching on popular health matters will turn to these notes with a pleasurable surprise. Sir GEORGE NEWMAN, as chief medical officer, contributes an introduction on health education. Hygiene, he points out, is so essential to school life that it cannot be a mere subject of instruction; like behaviour and conduct it is the groundwork of all else. The way of hygiene cannot be found by the uninitiated child, and it is nurture rather than instruction which he requires. Hygiene should be taught to young children by habit training, although, when the elements of science and housecraft have been mastered, some degree of reasoned explanation and interpretation may become practicable. But for young children there is little need or place for instruction except in the mode of presenting health axioms and practices. One teacher may choose to make a daily inspection of the children, another may utilise the drawing lesson as an opportunity for dealing with cleanliness; the midday meal may furnish occasion for a talk about the care of the teeth, and nature-study lead to brief practical applications of physiology. For the older children health instruction may constitute part of the general science course or of a course in simple biology. Some of its substance will come into periods devoted to history and geography, while in the case of girls much will naturally form part of the teaching of domestic subjects and housecraft. The live teacher will lose no opportunity of securing the child's active coöperation in all matters of health at school and will endeavour to link up the school with the home.

Dr. R. H. CROWLEY, senior medical officer to the Board of Education, had the issue of this Handbook before him when a week or two ago he addressed the North of England Education Conference on some fresh aspects and developments of health in relation to education. He remarked how securely set had become the medical inspection of school-children in the public health service of the country and how it had contributed to the shaping of a freer curriculum for young children, to the provision of open-air schools for the delicate child, and to the planning and equipment of schools more in harmony with the child's requirements for growth and development. But in removing physical defect and preventing its onset the ground would only have been cleared for the development of the principal aim of the Service, the realisation of which was in the hands of the teacher, the doctor being called upon to guide and, perchance, to equip himself to guide. Regarding the whole process of education as in itself a biological process, function illustrated by form should be the motto of the school teacher, the subject itself being entitled to rank as fundamental with the teaching of English and the opportunity for creative work. It is easier, he said, to make health education grip in the case of girls than of boys. Domestic science—or, to use the preferable term, home economics—in the case of girls linked up the home with the school, but some equivalent in the case of the boy had yet to be worked out. It might come through further development of handyman courses, through wider acceptance of the boy-scout movement, through greater emphasis on first-aid activities, or through steps taken to interest older boys in community hygiene such as water-supply, sewage, and the distribution and care of milk. Should public education in this country develop on such lines, the charge could no longer be truly laid against the system that it is too grey.

[1] Board of Education. Handbook of Suggestions on Health Education for the consideration of teachers and others concerned in the work of public elementary schools. H.M. Stationery Office. 1928. 6*d*., paper; 1*s*., cloth.

JOHANNES FIBIGER.

IN Prof. FIBIGER, whose death is announced from Copenhagen, experimental medicine loses an exponent whose work opened a new chapter in research on cancer. His association with this disease was at first almost accidental, and before the war he was known primarily as an authority on the pathology of tuberculosis, which he had studied since his appointment to the chair of pathology at Copenhagen in 1900. It was, indeed, whilst inoculating tubercle bacilli into rats that he first observed unusual growths in the stomach of these animals. Gastric cancer in the rat had never been seen before, the coincidence of finding three cases together was remarkable, and FIBIGER set himself to discover its cause. Microscopic examination eventually revealed the presence of an unknown nematode worm in the centre of all three tumours, and by now the investigator's genius was thoroughly aroused. First he carefully examined an immense number of rats to find a similar growth, but without success. Then he discovered in the literature a report that nematode worms were sometimes found in the stomach of rats fed on cockroaches; but here again he was met by defeat, for in the laboratory he could not reproduce the phenomenon. At last he heard of a factory where there was an abundance both of rats and cockroaches, the latter being *Periplaneta americana* instead of the more usual *Stilopyga orientalis*. In this factory, it was discovered, many of the rats had gastric cancer, and the cockroaches, which came from the West Indies, had nematode larvæ in their muscles. The life-history of the worm was thus demonstrated, and by feeding other cockroaches on eggs obtained from the fæces of infected rats, FIBIGER was able to secure a supply of cancer-producing parasites for himself. Thus the lucky discovery was turned into a valuable means of advancing knowledge, for until it was made no method had been known by which cancer could be regularly induced in animals de novo. The work on irritation thus begun was carried on not only by FIBIGER himself with great skill, but also by a host of other investigators whose pursuit has had results of the utmost importance. The honours and distinctions which he received, including the Nobel Prize for Medicine in 1926, were won with the approbation of those best capable of judging his services, and we are glad to think that in England these services were given grateful recognition. His death at the age of 61 will be greatly deplored, but work on the lines he laid down is continuing all over the world.

Annotations.

"Ne quid nimis."

MENTAL DISABILITIES AND PREMATURE BIRTH.

THE question is often asked whether prematurely born infants are at any disadvantage, compared with others, once the immediate dangers of their condition have been overcome. And if this is answered in the affirmative, the problem remains whether the defects they show are due, on the one hand, to their prematurity, or, on the other, to the unknown factors by which that prematurity was caused. For many years Dr. Carl Looft has been engaged in searching for an answer to the first of these questions, in so far as it bears on the nervous system. The first step in his investigation, which is referred to in *Acta Pædiatrica Scandinavica* (1927, vii., 15), was to estimate the intelligence of 38 premature children, and he found that some three-quarters of them showed retarded mental development. This was certainly striking, but its exact significance remained uncertain because all the children examined proved to be rickety, an association of rickets with prematurity being, he says, the rule rather than the exception. As a further stage in his investigation he got histories of all premature infants born in Dr. Petersen's clinic at Bergen from 1910 to 1916. After excluding twins, and infants weighing over 2·5 kg., there were still 91 children in the series, and he managed to trace seven survivors of them in the schools in 1920. All seven showed some degree of mental retardation when tested by the Terman scale, and their intelligence-quotients ranged from 87 to 57. In the course of eight years Dr. Looft has also examined 532 backward (non-syphilitic) children attending *ordinary* schools at Bergen, and has found that there were 5·5 per cent. "in whom the cause of the intelligence defect could only have been premature birth." The interesting summary of their histories shows that here again the picture is complicated by a very high incidence of rickets. The series included two cases of Little's disease, one case of tremor of hands, and five children who had been born in asphyxia. Among 105 premature children seen in Dr. Looft's practice in ten years there were, he says, 19 cases of Little's disease (the term is here applied to cases with evidence of pyramidal, extrapyramidal, or cerebellar lesions) with some degree of mental defect or retardation. There were also ten cases of mental defect without evidence of lesions, and three of epilepsy. Syphilis is said to have been excluded in all of them, and a psychopathic family history was only obtained in one. Lastly, an analysis of the histories of imbeciles sent to the special schools showed that about 9 per cent. of them had been prematurely born.

Dr. Looft believes with some of our own prominent pædiatrists that the influence of syphilis as a cause of prematurity has been much exaggerated, and he lays stress on the importance of P. Schwartz's observation that the cerebral vascular lesions found in syphilitic stillborn infants are precisely the same as those found in others. He is a convinced adherent to the view that the principal factor in the ætiology of cerebral diplegia is hæmorrhage, whether meningeal or intracerebral, and he also supports Schwartz's mechanical explanation of the production of these hæmorrhages during labour, and attributes their frequent occurrence in premature infants to the fragility of the vessel walls, in which the elastic tissues have not fully developed. In maintaining this opinion he is on firm ground, and will probably be supported by an increasing number of authorities. In an attempt to apply the same idea to the origin of mental defect, his argument, though suggestive, is by no means so convincing. To begin with, few other observers have obtained so little evidence of psychopathic family history in mental defectives. A common association between prematurity and mental defect is certainly suggested by the facts he brings forward, but his contention that the defect was the result of prematurity is not always borne out by the accounts of individual cases. In two of his series, for instance, there are cases of microcephaly, a condition in which the morbid process seems to begin at an early stage of fœtal life; this form of amentia might be the cause, but hardly the effect of prematurity. It must be granted, however, that our acceptance of birth trauma as the cause of spastic diplegia predisposes us towards believing that mental backwardness may be due to damage to association areas. Certainly Dr. Looft's investigations are of the kind that should throw light on this important problem.

THOSE OTHER PRACTITIONERS.

DESPITE the advance of scientific medicine many kinds of quackery still stand high in popular esteem and in his address on "Those Other Practitioners" to the Abernethian Society of St. Bartholomew's Hospital on Jan. 26th Lord Dawson touched on problems that are of real importance to the profession. He began by pointing out that a quack and an unqualified practitioner are not necessarily the same thing. A quack is "a man who makes baseless and boastful pretensions for a method of treatment," and the deception may be practised primarily on himself rather than other people. According to this definition there are quacks in the ranks of the orthodox profession, whilst unregistered practitioners can be free from the reproach. Many of these ξένοι employ moreover what, applied under the right conditions, are sound and helpful methods of treatment; but they must be distinguished from the qualified doctor because they have not had years of training both in science and clinical medicine, without which diagnosis is liable to unnecessary error. Diagnosis affords the one stable criterion, and diagnosis as Lord Dawson emphatically pointed out, must always precede treatment. The latter is, of course, not a monopoly of doctors; it is the expression of an instinctive desire in all men to relieve suffering in themselves or others. To-day, said Lord Dawson, the field of treatment is bounded on one side by the ordered territories of science, but on the other side there is no boundary; it shades imperceptibly into the uncharted regions of mind, faith, and superstition, in which the unqualified practitioner finds his hunting-ground. The histories of quacks like Elisha Perkins, Mesmer, and Coué, of whom he gave an interesting account, show an almost exclusive reliance on their patients' suggestibility. The osteopath employs manipulation as well, and his gifts in this direction are often valuable when controlled by diagnosis, though they may be highly dangerous in its absence. Similarly suggestion, when directed against functional disorder, is useful. It is only when it is divorced, as in some forms of faith-healing, from other methods of treatment, and when its claims go beyond the facts to embrace developed structural disease, that it becomes pernicious. The necessity for keeping all forms of psychotherapy within the bounds of diagnosis increases, the lecturer urged, from day to day. As man's adaptive capacities are outstripped by the material resources of civilisation there is an increased incidence of psychogenic disorders, especially those known as "exhaustion states." Patients suffering from emotional exhaustion do much better when their attention is directed to a real physical treatment, while such mind-healing as they require is carried on unobtrusively. "An exploratory operation on the mind does not heal by first intention except in delicate hands," said Lord Dawson, and psycho-analysis, so useful in some cases and fraught with such danger in others, should be kept in the hands of a few highly skilled and temperamentally qualified persons; like every other form of treatment, it should be directed by the clinician, and should be based on sound and accurate diagnosis.

The main contention of an interesting address was that the true physician must possess the gift of healing both body and mind. The difference between the orthodox practitioner and "those others" is an equipment of traditional learning and ethics which not only fosters this gift but enables it to be most effectively employed for the benefit of mankind.

TUBERCLE BACILLI IN BOVINE FÆCES.

In order to study the incidence of tubercle bacilli in the fæces of dairy cattle, Dr. Stenhouse Williams and Mr. W. A. Hoy [1] examined samples taken from 38 apparently healthy cows in five English counties. Of these samples 337 were treated by the antiformin method and 101 by Petroff's method; in each case a ounce of fæces was treated and two guinea-pigs were inoculated from the sediment obtained. Neither method completely eliminated the danger of "septic" infections in the inoculated animals, and the test was not regarded as complete unless the guinea-pigs lived longer than 42 days; when possible they were kept for 600 days before being killed. Of the 391 completed tests 6 (1·53 per cent.) gave positive results, living and virulent bacilli being evidently present in the fæces. Nearly all the 391 samples were taken from cows that had not been tested with tuberculin; the exceptions were 24 cows which were known to be reactors, but (as it turned out) had no tubercle bacilli in their fæces. Examination of the records showed that five of the cows excreting tubercle bacilli came from four farms lying within a radius of three and a half miles. Since not more than one single ounce of fæcal matter from each cow was examined, and since later experiments have shown that the bacilli are excreted at irregular intervals, and that antiformin has a variable influence upon their virulence, it is probable that the tests show too small a proportion of positive results.

BACKACHE.

In commenting on a paper on sacro-iliac subluxation we recently remarked that orthopædic surgeons of repute, not only in America but also in Great Britain, seemed to have had very various experience of this condition. Somewhat similar thoughts are aroused by a suggestive communication to the *American Journal of Surgery* (1927, N.S., iii., 523), in which Dr. F. H. Albee deals with cases that may conveniently be grouped together under the homely name of backache. As a surgeon whose name is specially associated with valuable work on autogenous bone-grafting, Dr. Albee might perhaps be expected to advocate radical operation, but in fact he recommends its restriction or abandonment in favour of gentler measures. He begins by offering a pathological explanation of many apparently dissimilar conditions which are generally labelled lumbago or sciatica or (in America) sacro-iliac strain, and which he would like to see grouped together under the name "myofascitis" which he has coined to describe them. To this suggestion there are, we think, manifest objections. In the first place, its adoption would imply the existence of an affection of muscle-fibres in favour of which there is no pathological or anatomical evidence, and in the second place the term "fibrositis," which has been in use for a good many years, is applicable to the group of symptoms in question and is free from some of the objections offered to "myofascitis." It seems a pity, moreover, to burden medical nomenclature with a new Græco-Latin hybrid unless it is absolutely necessary. Dr. Albee has become convinced that a large proportion of those cases which are by some surgeons in America diagnosed as sacro-iliac strain are in reality due to "myofascitis," the chief symptom of which is pain at bony insertions elicited by tension on the involved muscle or fascia." Many of his cases had been treated for sacro-iliac relaxation and had relapsed, and he states that at least 90 per cent. of the cases of "low back pain," "lumbago," "sacro-iliac strain," and "sciatica" which have been referred to him under these diagnoses are on more comprehensive analysis instances of myofascitis, to which disorder he applies that overworked term "a clinical entity." It is really due, he considers, not so much to local injury as to faulty metabolism and absorption of toxins from the large intestine, and since reaching this opinion he has treated all such cases in which no anatomical lesion can be demonstrated by lavage of the colon, implantation of *Bacillus coli*, and restriction of proteins in the diet. In 40 cases which he tabulates the results are reported as from "good" to "excellent," except in two in which the treatment was not properly carried out and one other in which it had only just begun.

In the paper which follows Dr. Albee's in the same journal (p. 534) Dr. H. Lusskin and Dr. H. Sonnenschein, of New York, reassert the reality and frequency of sacro-iliac subluxation and arthritis, and advocate therapeutic measures similar to those recommended by Dr. D. Hoyt Cox, on which we commented some weeks ago.[1] They make no allusion to any treatment directed towards improving metabolism, and in many ways their communication is in strong contrast to that which immediately procedes it. Like many other American surgeons they find that the application of adhesive strapping is often efficacious, but in severe and resistant cases they advocate fixative operations. They say that "all patients" with this form of sacro-iliac disturbance "have aggravated weak feet." On the basis of such experience as has hitherto been recorded in this country it is difficult to decide whether the latest views of Albee, or his earlier ones, and those held by Lusskin and Sonnenschein most deserve acceptance. The sins of the human colon seem to be brought home to it with increasing emphasis as time goes on, and if Dr. Albee's last indictment results in the finding of a true bill it will furnish an additional argument for Sir William Arbuthnot Lane's attacks upon stasis.

DIPHTHERIA CARRIERS.

It has long been recognised that diphtheria carriers may discharge bacilli intermittently, and three negative examinations are usually required before a suspect may be discharged. F. H. Thomson, E. J. Mann, and J. E. McCartney [2] showed that examinations should be continued at least once a week for the first fortnight of the disease and thereafter twice weekly for three weeks. Only when six consecutive examinations had been negative could the patient be declared free. In a recent investigation into carriers, described to the Epidemiological Section of the Royal Society of Medicine on Jan. 27th, Dr. McCartney and Dr. W. C. Harvey found it necessary to study the intermittent periods very carefully. Attempts to cure a carrier may coincide with one of these periods and convey a false impression of the result. They did not consider a carrier free unless six consecutive tests spread over six weeks were all negative, and illustrated by their charts, shown on the screen, the necessity for this rigid standard. In one carrier five examinations were negative over a period of two and a half weeks, and bacilli appeared again at the sixth test. Another patient gave four consecutive negative results, then one positive followed by eight negatives. As the tonsils were large they were removed, after which the throat cultures yielded two positive results; then the nose gave one and then both remained clear. The work was carried on in the M.A.B. hospitals, and 350 carriers have been examined, swabs being taken twice weekly from the throat, each nostril, and, if necessary, from the ear. Loeffler's serum medium and a modification of Pugh's stain were used to identify the organisms, and virulence was tested by intracutaneous inoculation into the guinea-pig. The term "carrier"

[1] Journal of Hygiene, November, 1927, p. 37.

[1] THE LANCET, 1927, ii., 1302.
[2] Annual Report, M.A.B., 1925–26, p. 130.

was only applied to persons who harboured virulent diphtheria bacilli 12 weeks or more after the onset of the clinical disease. In addition, every patient was examined for abnormalities of the upper respiratory passages by Mr. Humphrey Marriner. Most of the carriers (94·8 per cent.) showed some abnormality; crusting of the nasal mucosa, enlarged tonsils or turbinates, adenoids, or deflected septum. It was found that the presence of these conditions coincided with a prolonged carrier state, and that those who had affections of ear and nose, as well as of the throat, carried longer than those with one or two lesions only. An examination of 300 unselected diphtheria convalescents served to point the moral. The proportion with healthy respiratory passages was much higher (27 per cent.), and none of them had any ear trouble. Of the 300 13 became carriers, and all of these had some clinical abnormality. Another control group was provided by 100 patients free from bacilli and ready for discharge. 48 per cent. of these had nothing wrong with their noses or throats, and the nose was affected in only 3 per cent. The majority had large but healthy looking tonsils, showing that enlarged tonsils do not in themselves hinder the natural elimination of diphtheria bacilli. The majority of carriers were between 1 and 5 years of age, so that the difficulties of examination and treatment were very great. It seems quite clear, however, from the results of these investigations, that the liability of young children to nasal catarrh with blocking of the passages is the reason why they tend to become nasal carriers. When the nares have grown larger there is less likelihood of crusting and so of the formation of pockets of inflammatory material. This corresponds very closely with the results of Dr. J. A. Glover's work on carriers of the meningococcus. Chronic carriers nearly always had some nasal defect, as he reminded the audience at this meeting, and most commonly an obstinate contact between the posterior end of the inferior turbinate and a deflected septum.

The interesting discussion which followed Dr. McCartney's paper revealed general agreement with his findings. Dr. R. J. McCann, of the Guy's Diphtheria Clinic, agreed that the nasal condition is of primary importance, and Dr. W. S. Copeman sounded a warning against indiscriminate tonsillectomy as a cure for carriers. He had investigated a number of tonsils removed for this reason at Great Ormond-street Hospital and had never found diphtheria bacilli beneath the surface. Only the pure tonsil-carrier, as Dr. McCartney agreed, benefits from the operation. Dr. Graham Forbes, recalling the increasing incidence of carriers and the probability that such an increase precedes an epidemic, remarked on the inadequacy of the efforts at present made by the London County Council to deal with the carrier. Here was another aspect of that much discussed little person "the pre-school child." Whether or no Dr. Forbes's sense of inadequacy is justified seems to be a pretty problem. A group of fever hospital superintendents, headed by Dr. E. W. Goodall, dared to defend the status quo. "Do these tests substantially lower the return case rate?" they pertinently asked (the rate is under 2 per cent. as things are). Dr. Goodall said that he had always felt anxious about discharging patients with abnormalities of the nose, but had not observed any serious results. Dr. J. D. Rolleston said that there had been no increase in the number of return cases in his district during the last two years, although he had given up routine cultivation of swabs. Dr. E. H. R. Harries [3] has shown that the carrier-rate can be reduced to negligible proportions without prolonged routine testing. Dr. McCartney, in reply, admitted frankly that he was not concerned with the practical aspect; he and his colleague had wanted to collect some facts about diphtheria carriers and had done so. Whatever superintendents may decide to do in the matter, there remains a very practical lesson in preventive medicine. Rhinitis was a constant feature in all the cases examined; in fact, Dr. Harvey does not think that carriers harbour bacilli in living tissues at all, and the general improvement coinciding with the cleansing of the filthy nose was most striking. It is reasonable to suppose that many cases of diphtheria, meningitis, and, probably, other conditions could be prevented altogether if mothers and nurses could be taught to keep the nasal passages of small children clear by thorough cleansing of the nostrils and the daily introduction perhaps of a drop or two of some simple antiseptic oil.

[3] THE LANCET, 1927, ii., 646.

ASTHMA AND AFFECTIONS OF THE SKIN.

A RELATIONSHIP between diseases of the skin and asthma has long been known to exist, and a recent study [1] by Dr. K. H. Baagöe, of Copenhagen, has added to our knowledge of this relationship. His material consisted of 124 asthmatics, 92 of whom were children, the remaining 32 being adults. Among the 124 patients there were 74 with a history of some skin disease such as prurigo, urticaria, pruritis or local œdema. Among 35 suffering from infantile or Besnier's prurigo, there were as many as 32 who gave a positive reaction to cutaneous tests, 29 to feathers, 10 to hair, 14 to foodstuffs, and 5 to pollen. Only in three cases was there a doubtful or negative reaction. Cutaneous tests carried out in 32 of the 34 cases of urticaria gave a positive reaction in 25 cases, in 22 to feathers, in 9 to hair, in 8 to foodstuffs, and in 7 to pollen. Cutaneous tests were also carried out in all of the 14 cases of pruritus, the reaction being positive in 9 of these cases. With regard to the six cases of local œdema, which most frequently affected the face, lips, and mouth, it was possible to demonstrate a relationship in four of them between the œdema and the patient's idiosyncrasy to certain substances such as eggs or fish. All six patients gave a positive skin reaction, 5 to feathers, 3 to hair, 3 to foodstuffs, and 3 to pollen. Altogether 57 out of 70 patients with diseases of the skin submitted to cutaneous tests gave a positive reaction. Only in 13 cases (11 children and two adults) were the reaction doubtful or negative. Among 50 other asthmatics (35 children, 15 adults) with no skin affections, there were 30 giving a positive cutaneous reaction. Unfortunately no control observations were carried out to show whether the skin diseases already referred to were as common in persons without asthma as in asthmatics. But, as Dr. Baagöe points out, there seems hardly to be any reason to doubt the existence of a common ætiological factor in those cases in which the skin disease broke out in conjunction with the asthmatic attack. The establishment of an ætiological relationship is, of course, more difficult when cutaneous eruption occurs independently of an attack of asthma, perhaps even at a time when the patient has not yet had any attack of asthma. Dr. Baagöe points out that the skin diseases he has observed in connexion with asthma have the following features in common: they occur in paroxysms, are characterised by hyperæmia, œdema, and itching, and are frequently if not always, due to some idiosyncrasy. With this common denominator it is natural that these diseases should be classed in one group as allergic or idiosyncratic diseases of the skin.

[1] Acta Medica Scandinavica, vol. lxvii., Fasc. iii.

THE EMPLOYMENT OF TUBERCULOUS PATIENTS.

THE question of how to deal with tuberculous patients after their discharge from sanatoriums, especially those following unsuitable occupation or living or working in unsatisfactory conditions, is one of the most difficult of all the problems connected with tuberculosis and one for which no general solution has yet been found. A large number of schemes have been tentatively brought forward from time to time, chiefly in this country and in America, but most of these are impracticable from an economic point of view, while others can at best deal only with a small fraction of the patients. The subject was brought up at the recent meeting of the Tuberculosis Society (a

account of which will be found on p. 233), but no new solution was arrived at, and the only scheme brought forward was one for teaching the patient while in the sanatorium a trade which he could afterwards carry on in his own home, the necessary tools and raw materials being provided. The cost of such a scheme would, however, obviously be prohibitive on a large scale, and on the whole the training of adults in a new occupation, regarded as suitable on medical grounds, has not proved of much value.

In a report by Dr. F. N. Kay Menzies [1] the whole subject is discussed afresh, and although Dr. Menzies has no new policy to bring forward the conclusions arrived at and the data on which they are founded are of considerable interest. He points out that during the war, "when work and good wages were obtainable by anyone capable of doing any work, the unemployed tuberculous problem disappeared," and he believes that a wave of prosperity, resulting in a demand for labour, would again lead to the widespread absorption of tuberculous labour, even though the working capacity of tuberculous persons whose disease is not arrested is not more than 50 per cent. of that of a normal person. Under special conditions—e.g., types of employment which call for little physical effort, short hours, and hygienic environment—tuberculous persons are capable of working, but Dr. Menzies makes it abundantly clear that "under any circumstances, a commercial undertaking employing tuberculous employees and paying a wage adequate for their maintenance cannot be run without considerable financial loss and must be subsidised in some way." A critical examination of possibilities of employment by private employers or in specially selected jobs under public authorities, or in workshops and undertakings specially organised for the purpose, suggests that an industrial settlement run in connexion with a sanatorium is more easily organised than an independent workshop, but Dr. Menzies finds that such settlements are not only costly to establish, but they are also definitely limited in regard to the number and character of the cases for which they are suitable. Moreover, their extension on a large scale may, he thinks, prejudice the few which have already attained a measure of success. It is disappointing to learn that "it has not so far been found possible to provide the benefits of regular work at a cost which allows of an employment scheme being considered as a practical policy for general adoption," the most that can be said being that, with careful management, a certain number of selected cases could possibly be employed at a cost less than that entailed by their complete maintenance out of the rates. Wherever possible Dr. Menzies urges that a tuberculous person should seek for an employment for which his previous experience fits him, the best course, as a rule, being his return, perhaps under modified conditions, to his usual employment.

Vocational training does not seem to have been a success, judging from the general opinion of tuberculosis officers and others. Such training in skilled or semi-skilled occupations may possibly be justified in exceptional cases or in special circumstances, but Dr. Menzies considers it unlikely to be of practical value as a part of the organised scheme for dealing with tuberculosis throughout the country. The teaching of simple handicrafts, however, in sanatoriums and tuberculosis dispensaries is valuable as a means of usefully employing the time of the patients and of diverting their minds, even where such occupation is of no economic value. The question of the employment of tuberculous women is carefully gone into. Dr. Menzies believes that a workshop for such women on the lines of the Altro workshops in America would be worth consideration, another satisfactory course being the employment, where possible, of women ex-patients in domestic and other duties in connexion with sanatoriums and similar institutions. Dr. Menzies recalls that in 1926 the Metropolitan Asylums Board were obliged to postpone opening an institution for advanced cases of pulmonary tuberculosis on account of the difficulty of obtaining nursing staff, partly owing to fear of infection. It will be remembered that the Ministry of Health, in a circular issued in December, 1923, laid down a scheme for coöperation between the managers of the various employment exchanges of the Ministry of Labour and the tuberculosis officers, with regard to the employment in suitable occupations of male patients on discharge from sanatoriums or hospitals. The scheme does not appear so far to have shown many good results, possibly owing to the large amount of unemployment in the country at the present time. Very few of the metropolitan borough councils would appear to have utilised the scheme to any extent, judging from a summary, given in an appendix to Dr. Menzies's report, of replies from several of these councils to a circular letter sent out in July, 1927, inquiring as to the working of the scheme. Reference may be made here to a paper by Dr. John F. Russell, which was published last year,[2] in which the writer argues that working people cannot as a class be treated successfully at sanatoriums owing to the prohibitive cost, both to patient and to institution, of a sufficiently prolonged period of treatment. He urges that municipal dispensaries might be utilised in the place of sanatoriums, thus allowing the patient to live at home, to carry on his regular full-time work—where his physical condition allowed it—when, because the cost to the community would be small, he could continue treatment indefinitely. The writer points out that the mental and physical strain is much greater in working at a new and unfamiliar occupation than it is in continuing a usual one; in the latter case the exercise necessary to continue work is habitual and the body has acquired tolerance. While Dr. Russell is not prepared to say that this method would be best for all classes of patients with pulmonary tuberculosis, he is convinced that it is the only method available for the proper and continuous care of tuberculous patients of the labouring classes.

The whole question is big with difficulties, but one thing, at any rate, is certain: that, in Dr. Menzies's own words, every factor which tends to bring tuberculous persons under treatment when the disease is still curable diminishes the flow of patients into the ranks of the unfit and unemployable. The advantages of early diagnosis, followed by treatment sufficiently prolonged to bring about full restoration of health and working capacity cannot, therefore, be over-stated.

[1] Published by the London County Council. No. 2545. 1928. 1s.

[2] American Review of Tuberculosis, 1927, xvi., 145.

A SHOCKING FILM.

SOME of the difficulties inherent in propaganda against venereal disease are illustrated in a film called the Dangers of Ignorance now being exhibited for Wardour Films, Ltd., at the Court Cinema, Tottenham Court-road, London. The producers have aimed at preaching "a powerful human sermon dealing with the social evil which is undermining the physical and mental health of the nation," and their attempt has won the approval of the Central Council for Health and Education set up a few months ago by the Society of Medical Officers of Health. It thus bears an official medical cachet, and we are informed that a proportion of the takings is to go to the Council's funds; but exhibition of the film is due to private enterprise and the public is encouraged to see performances by descriptive "catchlines" such as "a medical picture visualising the terrible havoc resulting from pandering the sexual passions . . ." "depicting cold scientific demonstrations on the horrors following in the train of venereal disease." When this has been said it must be admitted that the general tone of the production is good and that the instruction is both clear and convincing.

The film is divided into four parts, in the first of which we are introduced to a couple of ignorant youths at a "fair" resembling the amusement park at Wembley. Seeing them solicited, a watchful

stranger directs their attention to a pavilion labelled "sexual diseases" where an elderly lecturer is giving an account of the damage done by gonococcal infection. The captions accompanying his address are often too technical for a lay audience, making free use of words like "mucous membrane," but the point of his teaching can hardly be missed by anyone who keeps an eye on the models that show the manner in which the organisms reach their various locations in the human body. The genital tract is seen in sagittal section and gonococci, neatly paired and the size of small beetles, make their way with terrifying precision into the anterior and posterior urethra, the prostate, epididymis, bladder, uterus, or Fallopian tubes, according to the stage reached by the lecturer in his argument. Further models show the mechanism of infection of the mucous membrane, the reaction of the tissues, and the formation and spread of pus. The technique of their construction is so good that the photographs would not come amiss in a lecture to medical students. Particularly effective are those which show cicatrisation in the epididymis and Fallopian tubes, leading to sterility, and the lesson that treatment must not be abandoned before cure is brought out with all possible emphasis. Reiteration of the same lesson continues throughout the rest of the film, which tells the stories of a number of people who have contracted venereal disease. The first, a young student, is attacked by gonorrhœa after visiting a prostitute. Fortunately he meets a venereal specialist and his case is early taken in hand, so that after a fortnight no more cocci can be found in his urethral discharge. He is then inclined to laugh at the idea of further treatment, but the laugh is turned to a prayer after the doctor has taken him round his private wards to see the plight of those whose disease is chronic, and the damage which they can inflict upon women and children. Models are again invoked to show how gonococci get into the blood stream, and patients with arthritis and endocarditis are shown to point the moral. Finally the student asks what he can do, when cured, to prevent this loathsome infection ever occurring again, and is told that there is only one sure safeguard—complete abstinence from promiscuous intercourse. That such abstinence is desirable from the point of view of innocent third parties is the message of the next section of the film, in which a baby is found to have developed a syphilitic chancre by contact with his nurse. She in her turn has been infected by a man in the park who told her that "there's no harm in a kiss," and gave her one. The disease has been allowed to reach the secondary stage because she put herself under the care of an imposing quack, and the net result of her ignorance is to infect a child and throw her out of occupation. The doctor gives her domestic work in his hospital, where she has ample chance of seeing, ad nauseam, the late effects of her disease. Their horror is further rubbed into the audience by the fourth part of the film, whose scene is laid in the familiar mortgaged homestead of cinema-land, but departs from type in that the farmer is a physical wreck, has no children, and has had to watch his wife develop G.P.I. as a result of his early indiscretion. Her destructive mania wrecks the home, and they are taken to the poorhouse. Their sole support, a niece, goes to the city, gets work in a draper's, and is seduced by a young man who gives her syphilis. The rest of the film is devoted to her efforts, under medical influence, to induce him to go on with treatment for the necessary period of years. In this she is at last successful, the doctor approves their union, and the story ends a year later when the grateful parents bring a healthy child to receive his blessing.

Enough has been said to show that powerful arguments are presented in favour of early and complete treatment. Fear is the instrument used to gain this object, and there is no doubt that it is often effective. On the other hand, it is easy to produce more of this emotion than is strictly necessary and to associate it too widely. It is a mistake, for instance, to imply that kissing is a common means of conveying syphilis; the section in which a nursemaid lapses in this way and thus becomes responsible for infecting a baby is likely to cause an immense amount of anxiety among girls and boys who have kissed a stranger and will do so again. The minds of young people are already too often disturbed by fears relating to sex, and there are too many morbid obsessions about microbes. In general the public needs to be taught about health rather than disease, and it would be unthinkable if films were exhibited to show the ravages of all the diseases which different medical authorities regard as preventable. In the case of syphilis and gonorrhœa, however, there is exceptionally good reason for instruction about the results of untreated infection and about the way in which this infection is conveyed. The instruction must be emphatic, but it loses nothing by leaving a good deal unsaid. Information on these subjects is better conveyed individually than to large audiences, but the good done by showing such a film as the Dangers of Ignorance probably more than compensates for the bad. It would, however, gain by considerable curtailment of the pathological items. We note that, unlike the ordinary erotic drama, it is shown to men and women at separate performances, a needless sop to sentiment, as the general effect it produces on the mind is nothing if not sobering.

THE EMPEROR FREDERICK'S FATAL ILLNESS.

IN a paper recently published in the leading Dutch medical journal [1] Dr. H. T. Deelman, professor of morbid anatomy at Groningen, describes the result of his examination of a laryngeal tumour sent to him by Prof. Burger. On naked-eye examination the growth appeared to be a papilloma, and this view was confirmed by the microscope, which showed, however, that in close proximity to the papilloma was a second small growth which proved to be a carcinoma. This case, as Prof. Deelman points out, is not only of practical importance, but also bears on a historical incident which had far-reaching consequences. It is clear that if the small tumour had not been included in Prof. Burger's incision the patient would undoubtedly have returned later with a typical carcinoma at the site of operation. The conclusion would then have been that the clinician and pathologist had both made an erroneous diagnosis and that the tumour excised had really been malignant after all. The historical interest of the case lies in its application to the last illness of the German Emperor, Frederick the Third. It will be remembered that 17 months before his death at the age of 56, the Crown Prince, as he then was, developed symptoms of a laryngeal affection. A papillomatous growth was found on the left vocal cord and was destroyed by the cautery without a pathological examination having been made. Owing to repeated recurrences in which the cautery was employed on each occasion, a diagnosis of carcinoma was arrived at, and Sir Morell Mackenzie was summoned from London to give an opinion. Mackenzie declared that the tumour was a papilloma and sent a portion of it for examination to Prof. Virchow, who confirmed the diagnosis of a benign tumour. The Crown Prince, who desired to attend Queen Victoria's Jubilee, came over to England, where conservative treatment was carried out by Mackenzie. Three months before his death Frederick became Emperor and a rapid aggravation of the laryngeal disease set in. Mackenzie finally decided in favour of the diagnosis of cancer of the larynx, but by this time it was too late for a radical operation. Prof. Deelman considers the three possible theories as to the nature of the growth. He dismisses the view that the tumour was primarily a papilloma which was subsequently transformed into carcinoma, on the grounds that such an occurrence is extraordinarily rare. The second explanation, that the growth was a carcinoma from the first, and that with the possible exception of Gerhardt all Frederick's medical attendants were mistaken, also appears unlikely. A far more probable explanation is that there were two growths, a benign and a malignant, not

[1] Nederlansch Tijdschrift voor Geneeskunde, Dec. 24th, 1927.

necessarily of simultaneous development, and that finally the cancer rapidly increased in size and in its destructive effect.

A TESTIMONIAL TO SIR DAWSON WILLIAMS.

THERE is a widespread feeling that the retirement of Sir Dawson Williams from the post of editor of the *British Medical Journal* after 30 years of distinguished service should not pass without some recognition from the profession as a whole of his great services to medical journalism and so to the science and practice of medicine. A small executive committee has been formed with the view of sending invitations to representative members of the medical profession and others having close associations with it; this precedes the issuing of a general appeal and the decision upon the form of the testimonial. Though the committee does not wish to limit the amount of individual donations, it hopes that the sum eventually subscribed will include a large number of contributions, and so represent the profession throughout the country. Sir StClair Thomson is acting as treasurer of the Fund, and cheques should be made payable to him and sent to 64, Wimpole-street, W. 1, the envelope maked "Dawson Williams Testimonial." A fuller statement will be made later in the medical press.

THE BUNDABERG DISASTER.

DURING the week reports have appeared in the daily press of the death at Bundaberg, Queensland, of 12 children "as the result of antidiphtheria inoculation." There is not sufficient information available at the moment to explain clearly what has happened. One of the doctors consulted in Australia suggests "that the serum may have become contaminated"; the absence in the cables of mention of any of the obvious diseases such as tetanus, anthrax, gas gangrene, or septicæmia likely to be caused in this way is against the hypothesis of contamination. Another suggestion is to the effect that latent properties "became active" in the prophylactic and a virulent poison developed. This phrasing leads one to suppose that a toxin-antitoxin mixture was in use. Such mixtures have been described in articles in the Australian medical press and in the only list at our disposal of materials prepared by the Commonwealth Serum Laboratories, from which the product is said to have come, toxin-antitoxin mixture appears as the prophylactic issued. The violent toxicity of the prophylactic could conceivably arise from dissociation of the mixture with destruction of the antitoxin, or alternatively from error in the filling and packing of untested or toxic material. Dissociation of toxin-antitoxin was clearly the cause of the accident in Massachusetts in 1924, when mixtures were exposed to extreme cold during unusually severe weather[1] In connexion with the Baden (Austria) misfortune in 1924, when a number of children died, two explanations were given—the issue of toxin in mistake for toxin-antitoxin, or dissociation of toxin-antitoxin mixture with resultant toxicity; Grassberger's report was in favour of the former. In a more recent Russian disaster [2] 14 children received toxin in place of anatoxin (i.e., toxoid); eight of them died within two weeks, four of polyneuritis within a month and two recovered after symptoms of general intoxication. Here there seems to have been simply human error. The cumulative effect of these accidents will no doubt be to make people inquire to what extent they are exposed in England to similar risks. The answer is one to inspire confidence in the present procedure, for it appears that almost all the immunisation in this country is carried out with toxoid-antitoxin mixture. On inquiry from the Wellcome Physiological Research Laboratories we are informed that in the preparation of this prophylactic the toxin is detoxicated with formalin until at least one human dose is not lethal to a guinea-pig. During many years' experimental work with various chemical and physical agencies and long storage it has not been possible to change toxoid to toxin. The toxoid is next mixed, as an extra safeguard, with a calculated quantity of antitoxin. Of this mixture 5 c.cm. will not kill any of five guinea-pigs injected, but will produce in the animal high immunity. As a confirmatory test, the toxoid-antitoxin mixture in the form in which it reaches the patient must be so devoid of toxicity that 1 c.cm. taken from each size of phial filled from each bulk bottle will fail to produce any symptoms in guinea-pigs kept under observation for ten days. These tests are more exacting than the minimum prescribed by the Therapeutic Substances Act, the main provisions of which are already in force. It would appear that there need be no hesitation in offering prophylactic immunisation to all who desire it here.

[1] Glenny, Pope, Waddington, and Wallace: Jour. Path. and Bact., 1925, xxviii., 473. [2] Bull. Hygiene, August, 1927, p. 667.

"FRIGHT DISEASE" IN DOGS.

MUCH attention is now being paid to a curious canine disease which in the last 12 months has increased in this country to an alarming extent. It is seen especially among sporting dogs and packs of hounds, and the owners of affected dogs, in describing the symptoms, have repeatedly remarked that the animal seems suddenly to have seen a ghost. Although to all appearances in perfect health, it gives a curious howl of fright and rushes away, often without any apparent idea of direction, in a state that seems to be terror. This condition may last only for a few moments, recovery being almost as rapid as onset, but on the other hand, it may be half an hour or more before the animal recovers its normal appearance. The cause has not yet been determined, and Prof. F. T. G. Hobday has issued an appeal to the public for funds, wherewith scientific research on the disease can be conducted at the Royal Veterinary College, of which he is the principal. At the present time the treatment which has been found most successful is removal of all biscuit from the dietary, combined with keeping the patient as quiet as possible for at least ten days or a fortnight, and the administration of nerve sedatives. The proportion of actual fatalities from the disease itself is negligible, but the appearances are very alarming, and dogs have sometimes injured themselves severely by violent collisions in the course of their frantic movements. The condition is said to have been observed first in America some five or six years ago, and it is rapidly increasing in that country. Such interesting symptoms should well repay careful study, and we hope that the necessary funds will at once be made available in response to Prof. Hobday's appeal. So far as can be judged, the disease seems to be peculiar to dogs, for veterinary practitioners assert that nothing identical with this "canine hysteria" has been observed in any other species of domesticated animal.

Mr. H. L. Eason, C.B., C.M.G., M.S., superintendent of, and senior ophthalmic surgeon to, Guy's Hospital, has been appointed to represent the University of London upon the General Medical Council.

A RECEPTION will be held in the House of the Royal Society of Medicine, 1, Wimpole-street, W., on Wednesday, Feb. 15th, at 8.30 P.M., when the guests will be received by the President, Sir James Berry, and Lady Berry. At 9.15 Colonel W. P. Macarthur, professor of tropical medicine in the R.A.M. College, will give an address entitled Some Medical References in Pepys.

OWING to ill-health Sir Arthur Chance has resigned his positions as representative of the Royal College of Surgeons in Ireland on the General Council of Medical Education and Registration and on the Irish Free State Medical Council. His place on the General Medical Council will be filled by Sir William Taylor, and on the Irish Council by Mr. R. C. B. Maunsell. Sir Arthur Chance had been a member of the General Council from 1911 to 1914, and continuously since 1915; he was a member of the Irish Council since its establishment last autumn.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CCLXI.

THE TREATMENT OF IMPOTENCE.

IMPOTENCE is the inability to perform satisfactorily the sexual act and is a condition quite independent of sterility. An impotent man is not necessarily sterile; nor is a sterile one impotent, although failure to consummate normal coitus is naturally a handicap to fertility. Cases of impotence may be divided into two classes, *secondary* impotence in which the disability is the result of an organic lesion in the genitalia or elsewhere in the body, and *primary* impotence in which no such lesion can be found.

Secondary Impotence.

The lesions of the genitalia that may give rise to impotence are numerous, but are not often met with in practice. Amongst them may be mentioned ectopia vesicæ, hypospadias, induratio penis plastica, elephantiasis, and arrested development of the penis, the result of some such glandular deficiency as eunuchoidism. More common are those cases in which the impotence is the result of lesions situated elsewhere in the body. In this connexion diseases of the central nervous system are of the greatest importance, and for this reason every case of impotence should be submitted to a careful neurological examination in order that such diseases as early tabes and disseminated sclerosis may be excluded. It must also be remembered that the disability may be secondary to any impairment of the general health, or to such conditions as diabetes, thyroid insufficiency, and the taking of drugs. In old age it may be physiological, although men differ widely in the age at which the sexual power is lost.

Sometimes, when an organic lesion is found, it does not appear sufficiently grave to explain the impotence. As an example may be cited the impotence that may follow an infection of the genital tract or a comparatively trifling operation on the bladder or genitalia. In these cases a psychological factor can generally be discovered, the patient having developed a fear that his previous trouble may have impaired the sexual function. Such cases really belong to the type of impotence now to be discussed.

Primary Impotence.

In these cases no lesion can be found either in the genitalia or elsewhere in the body to account for the disability. The patient is usually of the psychopathic type, intelligent, introspective, emotional, and nervous. He must be carefully handled, as it is only with great difficulty that he gives his confidence, and unless that confidence is gained nothing can be done to help him. In the majority of cases his disability is only discovered after marriage, for such men are more likely than not to have been continent previously.

Careful inquiries should be made on the subject of any previous sex experience, nocturnal emissions, and the efforts that have been made to consummate marriage with their results. Sometimes the impotence will be found to have been preceded by a period of incomplete erections with premature ejaculation and frequent nocturnal pollutions. During the interrogation the patient should be encouraged to speak freely, so that an insight may be gained of his knowledge of sexual matters, and a clue obtained to his particular psychological problem.

In some cases the impotence will be found to be a symptom of a well-established neurosis, and the only method of dealing with the patient will be to place him in the hands of a competent psychotherapist. In other cases the detection of the psychological cause of the trouble presents less difficulty, and the practitioner will feel capable of dealing with it himself. Here it is possible only to give a few examples of some of the simpler problems that may be met with.

Fear is by far the commonest factor in the production of functional impotence, and sometimes the particular form of fear which is at the root of the trouble may be discovered in the course of the preliminary conversation. The majority of men have at one time or another masturbated, and not infrequently there has become linked up with the practice the fear that permanent damage has been caused entailing loss of sexual power. With such patients it is only necessary to dispel this illusion in order to cure them. Another type that is commonly met with is the patient who has been brought up since childhood to regard anything connected with sex as something that is essentially unpleasant and wrong. Any sex urge that he may have felt prior to marriage has been sternly repressed, and even when he is married, although the taboo placed on sex may have been superficially removed, the old sense of guilt still persists in his subconscious mind and inhibits coitus. In order to cure such a patient a complete change in attitude towards the whole subject of sex must be effected. This may only be achieved with great difficulty, and the help of a skilled psychologist will almost certainly be required.

It is, of course, necessary to make sure that actual impotence exists before embarking on any treatment, as a patient may easily be wrong in his conclusions. I have seen more than one patient who has mistaken the outpouring of secretion from the secondary sex glands that takes place at times of sexual excitement for an emission of semen, and has persuaded himself that this denotes premature loss and impotence.

The Partner.—It may also be discovered in certain cases that the failure to consummate marriage is due to a mechanical obstruction in the passages of the female partner, and that normal coitus can take place when this has been dealt with. Less favourable are those cases in which the difficulty offered by the partner in marriage is not a mechanical but a psychological one. Impotence may be relative—that is to say, while remaining impotent with one partner the patient would be quite capable of consummating the sexual act with another. In some cases in which impotence supervenes some years after marriage, the explanation will be found in a transference of the patient's affection to some other woman. The patient himself may not be conscious that such a transference has taken place, and yet to the doctor the true state of affairs may be obvious.

As Freud has pointed out, for the complete realisation of the sexual life two "trends" must become fixed harmoniously together—namely, the sentiments of tenderness and of sensuality. Only too frequently the fusion of these two sentiments is incomplete, so that a man may find that in his marriage he is able to satisfy his sentiment of tenderness but not his sentiment of sensuality. The handling of such cases is fraught with difficulties and at the best only a compromise can be effected.

Allied to these is a large group of cases in which the sexual act can only be carried out provided certain conditions have been satisfied. The patient himself may not be conscious of the setting demanded for the successful carrying out of the act. The investigation of any dreams that are associated with nocturnal emissions or fantasies that have been held in the mind during masturbation may indicate the direction that further psychological research should take.

Adjuvant Measures.

It will be seen, therefore, that the treatment of primary impotence is almost entirely psychological, and that not infrequently it demands knowledge that only a skilled psychologist is likely to possess. Other measures, although of secondary importance, are often useful. Whilst under treatment such

patients should be forbidden to attempt intercourse, and, if possible, should sleep in a room by themselves. As a rule, it is advisable that the medical man in charge of the case should see the wife personally in order to explain to her the reason for this change, enlist her help, and, most important of all, prevent the arising of difficulties that are only too likely to have an unfavourable repercussion on the patient himself. In some cases it will be found that the mere forbidding of intercourse acts as a stimulus. Attention must also be paid to anything that affects the patient's general health, and he should above all be cautioned against overwork. It is a common delusion amongst such persons that they can return from their offices at the end of an exhausting day and yet retain sufficient energy to carry out an act which involves the expenditure of a great deal of emotional and nervous force. In those cases in which erections occur but are associated with premature ejaculation, benefit may result from the instillation of silver nitrate (grs. x. to the ounce) into the posterior urethra through an Ultzman catheter and syringe. Electricity is useful chiefly on account of its suggestive action, and for this reason is more likely to be effective than aphrodisiacs. Tonics, cold baths, douches, exercises, diathermy to the prostate, injections of testicular extracts or other glandular products may all have stimulative value. In nervous patients and those who have completely lost confidence as the result of past failure a small quantity of alcohol taken before resuming sexual relations may produce the proper "devil-may-care" attitude that is essential to success.

Conclusion.

The majority of patients who retain memories of many failures are likely to attempt coitus when the period of abstinence is at an end in a frame of mind that is almost certain to produce failure. The sexual act, instead of being a natural and almost mechanical reaction associated with a certain amount of pleasurable sensation and emotion has become for them a test at which they are almost certain to fail. The least subsidence of erection is noted and is taken as an omen of failure, and instead of pleasurable emotion there exists a state of anxiety and fear. For this reason the first coitus attempted after treatment is a critical period, and much judgment will be required on the part of the physician in charge to prevent disaster. The patient should be told that on no account must any deliberate planning take place as to when coitus shall be attempted. The act should be entirely spontaneous, and if better erections be present in the morning on awaking than at night—as is not unlikely—coitus should take place at that time. Moreover, an endeavour should be made to induce both husband and wife to regard the question of whether coitus is or is not achieved as of secondary importance, so that the element of anxiety may be reduced as much as possible. The fear of failure and the existence of a difficult situation between the two partners are both factors that militate against success, and must, therefore, be eliminated as far as is possible. Once the act has been achieved and confidence regained, the battle will have been won, and any artificial aids that may have been used during the period of preparation can be laid on one side.

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VOLUNTARY HOSPITALS AND PUBLIC AUTHORITIES. The Council of the Charity Organisation Society propose to discuss the question of the Voluntary Hospitals and the Public Authorities at a special meeting to be held at Denison House, 296, Vauxhall Bridge-road, London, S.W., on Monday, Feb. 13th, at 3.30 P.M. The chair will be taken by Lord Dawson of Penn, and the speakers will be Sir William Hamer, Dr. Graham Little, M.P., and Dr. Humphrey Nockolds. It is hoped that representatives of the voluntary hospitals and public authorities of London and Greater London will take part in the discussion.

Special Articles.

OUR HOSPITAL SYSTEM:

REALITIES OF THE PRESENT AND HOPES FOR THE FUTURE.*

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PROFESSOR OF SURGERY, BRISTOL UNIVERSITY.

I HAVE been greatly encouraged in upholding this thesis since I put it forward last June, by the very many medical men who have given it their support and by the very few who have come forward to defend the voluntary system. I fear the latter source of encouragement is illusory, as it is probable that a large number of people are so satisfied about the merit and stability of the system that they think it unnecessary and superfluous to defend it. Lastly, I have been encouraged by the defence put up recently by Dr. Graham Little, M.P.,[1] because so many of his admissions are fatal to his argument and because he has been driven to so many irrelevancies and inaccuracies in order to make good even such a poor case as he had. I shall refer to these points as they occur in the course of the present argument.

Definition and Description of the Voluntary System.

At the outset we are faced with the difficulty of giving a fair definition or description of the system we have to discuss. But this is imperative for any useful argument, because many hospitals having adopted other than voluntary principles, nevertheless retain the name, but confuse the issue.

What, then, are the essentials of the voluntary system? I would suggest that they may be summarised under five headings—viz. (1) free gift of land and buildings; (2) free-will maintenance by private endowment or voluntary subscription; (3) private management by donors or subscribers, or by their trustees and representatives; (4) free medical service; (5) a charity bestowed by the rich upon the poor. A sixth condition frequently occurs—viz., limitations imposed by the terms of the gift such as that the hospital is to serve a special locality, or to admit special cases, or to serve a special cult such as homœopathy or antivivisection.

Up to the beginning of the present century most of these essentials were carried out by the voluntary hospitals, but in recent years, and especially since the war, they have been so very largely modified or superseded that it may be very well argued that already the purely voluntary system has disappeared. So much is this the case that if we are challenged to say whether the voluntary system can survive we might begin by saying that in the original meaning of the term the voluntary system is already dead.

Present-day Violations of Voluntary Principles.

In the first place, maintenance by free-will gifts and endowments has had to be supplemented by various expedients. Parliament has had to make a grant of £500,000; patients themselves are required to contribute towards their own maintenance, and the sum thus contributed amounts to about 18 per cent. of the total upkeep; insurance schemes have been adopted whereby groups of workpeople are paid for during their stay in hospital; patients are paid for by poor-law or municipal authorities; and even the so-called voluntary subscriptions are now largely made up by a system of appeals, advertisements, lotteries, mendicancy, and blackmail unworthy of a great nation or of a great national service. Again, free medical service has had to be more and more supplemented by that of a paid staff. Not

* Being the opening address in a debate held by the Bath and Bristol Branch of the British Medical Association on Jan. 25th, 1928, on the subject—The Needs of the Community Require a Better Hospital Service than that Provided by the Voluntary System.

[1] THE LANCET, 1927, ii., 1275.

only have whole-time paid residents been increased and emoluments raised, but also a certain number of non-resident specialists, such as pathologists or anæsthetists, and in some places whole-time professors of medicine, surgery, or midwifery appointed. A third type of violation of the voluntary principle consists in the innovation of adding to the managing bodies, representatives of the working classes, or of the contributory insurance groups.

In all these three respects, therefore, the voluntary principle has been sacrificed, maintenance has been received from the State, from the municipal authorities, from insurance schemes, and from the patients themselves. An increasing proportion of the medical staff, including even the visiting staff, has been paid. The managing bodies have been altered in their character by the inclusion of those members who represent the recipients with those who represent donors.

Failure of the Voluntary System.

No one would seriously complain, however, about this sacrifice of the original ideals of voluntaryism if by this means adequate efficiency had been attained. But this is not the case, and every year during which energy and money are spent in trying to save the voluntary system our hospitals are being outdistanced by those of more progressive countries.

The failure of the voluntary system may be described under four headings :—

1. *It has failed to develop in proportion to the needs of the community.*—Only about 30 years ago all serious medical, surgical, and midwifery cases among the poor were dealt with by the voluntary hospitals. Now a very large proportion—probably nearly 50 per cent.—have to be treated by the municipal or poor-law hospitals. The 600 beds provided by the Royal Infirmary and the General Hospital in this city of Bristol have had to be supplemented by 600 beds at Southmead—a building of more modern construction and better site than are possessed by either of the voluntary institutions. It would seem rather futile to argue as to the relative merits of the poor-law and the voluntary hospitals. It is no longer a question as to whether we need have the former. They are here, they are increasing very rapidly in size, quality, and organisation, whilst the voluntary hospitals have had almost to stand still, the mere struggle for existence absorbing all their energies.

2. *It has failed to meet the growing need of the middle classes.*—Dr. Graham Little has admitted this so fully that I cannot do better than quote his own words :—

> "The waiting-lists for admission to these institutions (voluntary hospitals) are getting ever larger . . . a class is clamouring for treatment in voluntary hospitals which was never willing previously to consider such treatment as a possibility . . . the necessity to meet the demand of the middle class for hospital service has been very insistent."

The well-to-do and the middle classes are expected to support the poor-law hospitals by rates and taxes and to maintain the voluntary hospitals by free gifts, and having done these two things they must then seek treatment themselves in less well-equipped nursing homes and pay for this themselves. The bare recital of such a state of things will surely make us realise that there is something wrong with our hospital service.

3. *It has failed to maintain an adequate standard in regard to sites and buildings.*—I am speaking now of the country in general and our city in particular. Of course, there are a few favoured places where the voluntary hospital has been recently modernised, such as St. Thomas's or King's College Hospital in London, and also in those places where voluntary effort has been concentrated upon one main hospital such as Edinburgh, Leeds, and Manchester these institutions are first-rate. But in most places, including Bristol, the voluntary hospitals have had to be content with patched-up buildings on unsuitable city sites.

4. *Most important of all, it has utterly failed to coördinate the hospital services necessary for the community.*—This, to my mind, is the very crux of the whole matter. The voluntary hospital is an independent unit—an irresponsible charity, which is answerable to no one and responsible to nobody so long as it can pay its way. A hospital may be thoroughly bad from foundation to roof, bad in site, bad in management, but so long as its managing body can appeal to sentiment by such cries as "save our hospital," "we have treated in the last year so many thousand in-patients and so many thousand out-patients," and so long as clergy, leaders of politics, or society will lend their assistance in obtaining money then there is no power by which such a hospital can be replaced or reformed.

In the case of hospitals of essentially good quality the main object of the management is to make an independent hospital unit, rather than to coöperate with other units in providing a perfect hospital service for the community. A perfect hospital service must imply providing for all classes and all diseases. It must provide special apparatus, special departments, special practitioners, and special nurses of the best quality and in the right proportion to the need that exists for each of these things. This can only be done by unification and coöperation and can never be accomplished by multiplying special departments at many hospitals with unnecessary multiplication of apparatus and wasteful overlapping. Again and again different people, business men, hospital staffs, and university authorities have declared that amalgamation of the hospitals in Bristol is urgently needed for efficiency, economy, and progress, but the independent conservatism of the voluntary hospitals has each time proved to be an insurmountable obstacle to this reform. If the voluntary hospitals refuse to put their own house in order then they must not complain if some outside force—medical and public opinion—arises which will take their heritage from them.

Unjustified Claims.

The upholders of the voluntary system are wont to make many claims on its behalf which cannot fairly be sustained. The newspapers in particular are never tired of writing about our "wonderful voluntary hospital system" as though its superiority were universally acknowledged. But this is far from being the case. In other countries, such as Germany, Holland, Scandinavia, Canada, and America, there is not the slightest disposition to adopt the principle of voluntaryism, and what is much more significant, our own people, whether medical experts or laymen interested in hospital management, when they go to these countries to see other systems come back filled with misgivings about our own system, and they say quite plainly that if this system is not soon mended it will have to be ended. Prof. Berry, travelling in Canada and the States on behalf of Melbourne University, and Mr. Leaney, house governor of the General Hospital, Birmingham, going over the same route to advise about the new Birmingham hospital scheme, are notable examples of men brought up with knowledge and bias in favour of our voluntary system, who have been completely convinced by what they have seen, of its inadequacy.

It is claimed that the voluntary system of management is good and that it could not be sacrificed. Now this, too, I think is wrong. That the disinterested philanthropy of hospital managers is beyond all praise no one will dispute. But that the constitution of the managing bodies allows for the necessary expert knowledge of the needs of modern science, or of the needs of the community in respect to hospital service or medical education is open to question.

In the first place the majority of hospital managers are busy men, who only devote an occasional hour to hospital work. They have no previous education in medical or hospital things and neither previous to election nor during time of office do they have any experience of any other medical institution than that which they are serving. It seems, moreover, rather invidious to signal out the managers of voluntary hospitals for special praise on account of the fact that they do their work without any emolument.

because exactly the same can be said of those who serve on the guardians, the county or municipal councils. The board of management of a voluntary hospital, the board of guardians, and the municipal council can all be given unstinted praise for hard work done without fee. But every one of these bodies is defective in regard to expert knowledge, and most of all in their outlook and interest being narrowed to the management of their own institution whilst they take no responsibility for the hospital service of the community at large.

Voluntary hospital committees are actually engaged for most of their time on petty matters of detail relating to housekeeping or personnel, and any little economies that may result from their supervision is nothing compared to the terrible waste of men, women, and material brought about by the overlapping of many small hospitals doing similar work.

It is claimed that the voluntary hospital fosters research. It would be much truer to say that research goes on under much greater difficulties in our own hospitals than in the case of hospitals abroad. Dr. Little actually quotes the case of Lister, yet it is notorious that Lister did his work under the greatest discouragement in the various voluntary hospitals in which he worked in this country, but on the other hand his discoveries were quickly appreciated and systematically applied abroad; and that antiseptic surgery was in full practice in other countries when it was fighting for recognition here.

At the present time medical research is provided in our teaching hospitals in a far smaller proportion than is the case in America, our own Colonies, or in the various European countries. And, moreover, such scanty provision as does exist is chiefly made by the universities, which are themselves State-aided. Our voluntary system and the exploitation of the medical profession by the hospitals make it very difficult for young men to give themselves wholly, or partly, to medical research. In fact, it is almost impossible for a young man to get on to a good hospital staff unless he has private means, or unless he is prepared to spend all his time in coaching or some other remunerative work. How is it possible in the first place to have the choice of the best men, or to give such men as we can get, an opportunity of doing research work?

Those who uphold the voluntary hospitals are accustomed to speak of State hospitals as though such "bureaucratic" systems necessarily check research. The note of scorn is most profound when referring to Army hospitals or poor-law institutions. And yet in sober fact the Army system during the war, in some respects at any rate, did stimulate research, team-work, and organisation of treatment in a way which the voluntary system in peace time has been unable to imitate or even continue. Take, for example, the treatment of fractures. This was organised and managed by segregation of cases, continuity of treatment, and team-work, both among doctors and nurses, so that lives and limbs were saved, good methods were standardised, and young men were taught. I would venture to say that though no war exists to-day, yet a very strong case could be made out in London and all our big cities for an organisation of fracture treatment similar to that we were taught by the war. It should be decided how many beds and what sized out-patient department are needed for each city or district, probably nothing less than a 200-bed unit would be worth considering. Exactly the same improvement in results to the patient and teaching to nurses and practitioners would occur as did during the war, and yet who can be sanguine enough to imagine such a reform taking place in the present attitude of our voluntary hospitals?

The large poor-law or municipal hospitals are clearly indicated as most suitable fields for all kinds of organised treatment and medical research, if they can be provided with a staff on a more adequate scale. As a matter of fact, judged by the pages of the *British Journal of Surgery*, the staff of our poor-law hospitals do even now contribute to surgical research and literature more than the staff of many of the voluntary hospitals.

English nursing is claimed as the peculiar product of our voluntary hospitals. Dr. Little says: "We owe it to the voluntary hospitals that Sairy Gamp has been finally dispossessed by Florence Nightingale." Could any statement be more inaccurate or misleading? Surely Sairy Gamp was just as much a product of our system as Miss Nightingale, in fact more so. Miss Nightingale realised the defects of our nursing methods, but in order to find some better ideal she had to go abroad to Germany and France where she worked under certain religious orders. She came back to this country prepared to found an Order of Religious Nurses, but the Crimean War occurred and gave her the opportunity of developing her great genius. In establishing her ideas she worked chiefly and primarily with the army authorities, and again, therefore, we have to admit that it was not the voluntary system but a State organisation which enabled Florence Nightingale to demonstrate and perfect her nursing methods.

That the voluntary system ensures a specially kindly relation between the medical staff and the patient, and it is stated or implied that in other hospital systems and in other countries this relation is less happy. We are told a great deal about such vague things as "atmosphere," "sentiment," "humanity," and the "spiritual aspect." But most of these vague statements are either irrelevant or untrue. Most of us have served in voluntary and military hospitals at the same time and we know that not only was the relation between our patients and ourselves just as cordial at the latter, but also that patients greatly preferred being in the military to the civil hospitals.

In this connexion I must quote a sentence from Mr. Leaney's article, which ought to be read by all interested in this subject:—

"I will go further and say that I do not think that we show as much consideration for our patients in our organisation as we ought, and not as much as I have seen myself in other countries." [2]

There are at least two points on which our voluntary hospitals have much to learn in this very respect from hospitals in other countries and especially from those in America and Canada. In the first place, the out-patients ought to be given much greater consideration in regard to the matter of waiting for hours to see the consultant. Each ought to receive an appointment card specifying a given time so that as in the case of private consultations he should not have to wait for a long period. And again the home life and social circumstances of the poor patient ought to be a matter of organised inquiry, so as to ensure proper after-care and a follow-up of results.

Essentials of a Good Hospital System.

In conclusion the following may be briefly formulated as some of the essentials of an efficient hospital system:—

1. Management of the hospitals by the people for the people, including all classes of the community who are to use them.

2. Maintenance by an extension of the present Insurance Act. Maintenance of any who do not come under the Insurance Scheme to be paid for by themselves or by the county or the municipality.

3. Capital outlay for land and buildings to be provided for (*a*) by the use of existing buildings and sites, the sale of which in many cases would produce large sums of money and enable better sites to be obtained; (*b*) by State and county grants.

4. Effective fusion, coördination, or coöperation between all hospitals of every kind and variety in given areas. This fusion must be under the control of the Ministry of Health.

5. State aid without State control. This principle is already well established in the maintenance of many of our universities.

[2] On the Future of the Voluntary Hospitals. By A. H. Leaney, House Governor, General Hospital, Birmingham. The Hospital Gazette, January, 1928, p. 9.

OCCUPATION, HEALTH, AND MORTALITY

IN THE LIGHT OF THE REGISTRAR-GENERAL'S DECENNIAL SUPPLEMENT.

ONLY by reference to records, which usually take the form of mortality statistics, can the influences exerted upon the human frame, for good or for evil, by climatic conditions, by social status and customs, or by occupational environment, be disclosed and evaluated. Difficulty, however, arises in amassing sure and certain facts from which to draw deductions; but, on the other hand, the "average" human body is a delicate and reliable reagent, most proper for mankind to study. Comparison of race with race, of country with country, of urban with rural peoples, or of town with town, each uncovers differences of interest and importance. But no comparisons reveal such contrasts, challenging attention and declaring causative risks, as appear when social classes are envisaged and occupations are investigated.

This statement is borne out by a decennial report just issued by the Registrar-General[1]; it is the eighth since the series was started by Dr. Farr in 1851 and deals with the mortality of males in the years 1921–23 in five social grades and in different occupations in England and Wales. It differs from its forerunners in presenting, as well, the fertility of these men and the mortality of their infants; further, it distinguishes occupations for the first time on purely occupational lines, so accentuating the real differences between the mortalities. No longer is a group, exposed to some risk, diluted by others, industrially related, but not subject to the risk; for example, managers are no longer included with operatives; coal hewers are separated from others employed underground or at the pithead; and grinders of knives, with exposure to silica dust arising from their sandstone wheels, are kept distinct from the cutlers who mount and polish the articles. In this last instance the composite cutlery group in 1910–12 showed a mortality 63 per cent. in excess of the average; now the grinders alone exhibit an excess mortality of no less than 230 per cent. Another change is that the standardised "Comparative Mortality Figures" are calculated for ages 20–65, instead of for ages 25–65 as heretofore. The standard used is that population —109,296 males—which yielded exactly 1000 deaths at the death-rates for different ages prevailing amongst all occupied and retired civilian males in 1921–23. These changes forbid the institution of comparisons between the C.M.F.'s of this report and those of previous occupational supplements. Continuity, of necessity, has been sacrificed; much more, however, has been gained than lost. Still we may hope that in future reports further changes will be avoided.

A special feature has been made in the Supplement of mortality by social grade, passing from Class I. to Class V. in descending order of refinement. At every age Class I. has the advantage; while the handicap of Class V. is greatest in middle life, 35–45, when the influence of adverse occupational conditions is at a maximum and appears to exert a selective influence in eliminating the unfit. Certain causes of death, such as phthisis, have long been known to be correlated with social grade, and the new figures confirm earlier inquiries, but they also exhibit statistical evidence of other associations hitherto unsuspected. Perhaps the most remarkable of these is concerned with cancer, deaths from which are tabulated by site attacked. The influence of coal-tar products and shale oils in originating skin cancer among chimney-sweeps, pitch-workers, briquette-makers, and mule-spinners is again manifested; but the fact is new that cancer affecting the lip, tongue, mouth, jaw, onwards to the stomach and ceasing at the pylorus, shows for each site mentioned, although less definitely as we proceed from lip to pylorus, an incidence increasing steadily from Class I. to Class V. Below the pylorus, cancer attacks the social classes without discrimination. The upper alimentary tract can be largely influenced by food and drink, but the particular power developing cancer here more in Class V. than in Class I. remains unrevealed. Cancer of the tongue and œsophagus are related to the incidence of chronic alcoholism; but evidence is lacking of any association between alcoholism and cancer of the stomach. Similarly no facts are found to support the suggestion that most gastric cancers arise from ulcers. The data relative to cancer of different sites are given in full and carefully discussed; a few may be quoted:—

—	Ratio of cancer of—		
	Tongue.	Œsophagus.	Stomach
All occupied and retired males	1000	1000	1000
Social class—			
1. Upper and middle ..	480	763	597
2. Intermediate	733	907	820
3. Skilled workers.. ..	947	1041	997
4. Intermediate	1000	876	1058
5. Unskilled workers ..	1653	1299	1295

A somewhat curious fact is reported that nearly all the occupations noted as of excessive skin cancer mortality—ascribable in practically every instance to contact with fire or fuel stuff of some kind—record a cancer mortality for sites other than the skin also in excess of the average. Is this why Prometheus was punished for his gift of fire to humanity?

In contradistinction to the above and to phthisis stands diabetes, which affects chiefly the classes provided with the financial means of over-eating and under-exercising. But early and late diabetes are statistically different; at early ages hereditary defect in the pancreas may be the cause, while in later life overload breaks down normal machinery for utilising carbohydrate food. An unexpected coincidence is stressed—viz., that glass-blowers, skilled glasshouse workers, and glass-workers not in the glasshouse, all exhibit excessive mortality from diabetes, none of which occurs at ages over 65, and hence may be significant of some unrecognised occupational influence. Associated with diabetes stand appendicitis and cirrhosis of the liver, which latter varies in proportion to the financial means of obtaining so expensive a luxury as alcohol. Broadly speaking, these diseases cost money; the occupational groups which prove exceptions to the social grading are publicans, brewers, barmen, and cellarmen. Truly taxation, if not legislation, seems capable of imposing some degree of sobriety. Contrary to common belief, occupational risk is seldom expressed in circulatory mortality; but such mortality is an outstanding feature of the textile trades, both woollen and cotton, and it is associated with chronic nephritis. In fact, the conditions of work in textile mills are disclosed as promoting degenerative changes of the kidneys, heart, and blood-vessels. A hint at possible causation may lie in high mortality from circulatory disease among cotton weavers in dry sheds, but low mortality among those working in wet sheds. Myocardial disease is highest where silica risk is present, which in its turn is a cause of bronchitis and this, again, is positively correlated with chronic nephritis; thus silica dust—an essentially occupational risk—is exhibited as exerting a degenerative influence on other tissues than the lungs. Bronchitis considered alone, is more closely associated with social status than any other cause of death, with C.M.F.'s varying for the five classes from 12·7, to 27·2, to 46·5 to 59·4, and to 87·4 respectively. Causative influences of this disease are found in most forms of dust and also in exposure to artificial heat and moisture, as well as in the atmospheric conditions of the north as compared with those of the south.

The section of the report devoted to discussion of the 178 separate occupations, for which mortality

[1] Registrar-General's Decennial Supplement. 1921. Part II., Occupational Mortality, Fertility, and Infant Mortality. London: H.M. Stationery Office. 1927. 7s. 6d.

ata are provided in excellent tabular form, is too engthy for adequate summary. Agriculture, as lways, presents a favourable picture. Coal-mining is xtensively considered, both with regard to work done nd to coal-field. The coal-miner appears to have enefited in the last ten years less than others, but his ıortality is still favourable. Again Lancashire ollowed by South Wales is found with higher ıortality than other coal-fields, but the difference is ess than in 1910–12. Special attention is paid hroughout to manifestations of recognised risks, such s dust among tin-miners and iron-miners, stone-asons and potters, cotton-strippers and others; and ıtense heat among gas-stokers, puddlers, and glass-orkers. The new figures relating to fertility again how birth-rate increasing from the highest to the owest in the social scale, a characteristic pheno-ıenon of our own generation. Infant mortality is ound highest where the birth-rate is highest, but has fallen remarkably for all grades of the com-ıunity in recent years, and now varies from only 8 for Class I. to 97 for Class V.

MEDICINE AND THE LAW.

Illegal Operation: Verdict of Manslaughter.

On Jan. 27th Charles Jackson Palmer, aged 59, escribed as a medical electrician, was found guilty t the Central Criminal Court of the manslaughter f Mrs. Goldsmith, a young woman of 21, who had one to his consulting-room in Upper Brook-street or treatment on returning from her honeymoon. he prosecution alleged that her death was due to the nlawful injection of a fluid made up of soap and ater, injected for the sole purpose of procuring bortion. The accused stated that the deceased came o him for electrical treatment for anæmia and ervous debility; he denied that he knew that Mrs. oldsmith was pregnant; he said he was giving her lectrical treatment when she suddenly sat up, lenched her hands, and collapsed. He told the olice inspector that the treatment consisted of lacing a pad down the spine and inducing an lternating current through the body in the region of he abdomen. Dr. H. B. Weir, who made the post-ıortem examination, said the deceased was a erfectly healthy woman. On opening a portion of he body a soapy fluid began to escape; he saw ıething suggesting a slight abrasion. Sir Bernard pilsbury said the fluid was a strong solution of soap nd water; he drew the conclusion that the abrasion as produced by the nozzle of a syringe a few minutes efore death. Both these witnesses were of opinion hat the cause of death was shock due to an injection f fluid. The defence sought to discount these pinions and claimed that the evidence was consistent ith the view that death was the result of electric hock; if there was soapy water in the body, the dead oman had perhaps placed it there herself. After he jury had found the accused guilty, the Lord Chief ustice described the conviction as based on evidence o clear as to be quite overwhelming; it "approached he certainty of mathematical demonstration." A olice inspector reported that there was no previous onviction against the defendant; for some years he ad conducted a genuine medical electrician's business mong well-to-do people, but during the past 5 months the police had received information uggesting that he had been a party to illegal opera-ions; his premises had on that account been equently visited by inspectors. Lord Hewart sked questions during the case as to the by-laws ıade by the London County Council under its eneral Powers Act of 1920 for regulation of massage nd special treatment establishments. These appear o contain valuable provisions, but it is for considera-ion whether some further and more vigilant measure not possible to restrict the conduct of premises ke those of Palmer as a place where criminal bortion can be practised with such appalling results.

On Jan. 31st Lord Hewart passed a sentence of seven years penal servitude and ordered Palmer to pay the costs of the prosecution. Persons, said the Lord Chief Justice, to whom clients resort for the purpose of illegal operations, undoubtedly subject those clients to very grave risks; "it is right that all of them, wherever they may be in this country, should understand that they incur grave risks themselves."

Pasteurised Milk.

In 1922 Parliament forbade the offer for sale and the advertisement or description of milk as "pasteurised milk," except under licence given by the Minister of Health or granted with his authority under a statutory order. Licences could be granted on terms and conditions prescribed by such order. The subsequent Milk (Special Designations) Order of 1923 dealt inter alia with pasteurised milk and enacted as one of the conditions that, on a sample taken after pasteurisation and before delivery to the customer, the milk should be found to contain (in samples taken after the year 1923) not more than 100,000 bacteria per cubic centimetre. Our contemporary, the *Medical Officer*, reports what is perhaps the first of the prosecutions for breach of this condition. A Wandsworth firm was prosecuted at the Kensington Petty Sessions for selling "pasteurised" milk not of the stipulated statutory standard, a sample (submitted to the Clinical Research Association) having shown bacteria to the number of 323,333 per cubic centimetre. It was stated for the prosecution that two other samples taken might equally have formed the subject of proceedings, and that the lids of the churns from which the samples were taken did not satisfactorily exclude rain and dust. The magistrates found the offences proved and fined the defendant firm (which had not appeared) £5 and £10 10*s.* costs. There was a second summons on which a further fine of £3 was imposed. This was for selling in Kensington without a Kensington licence in breach of a condition specified in the licence. The firm had a Wandsworth licence for selling pasteurised milk, but this did not authorise sale outside the Wandsworth area except by way of wholesale distribution.

Death from Borax Poisoning.

Recently at an inquest at Luton on the death of an infant, 18 days old, Dr. J. Birch stated that the post-mortem examination showed death to be due to borax poisoning. The symptoms, he said, could have arisen from the use of honey and borax or glycerine and borax, a jar of which was produced in court. Dr. Birch criticised the use of this substance as dangerous especially when dispensed as a remedy for thrush—usually administered by smearing it on the gums of the infant. He stated that a quarter of the amount given to this baby had been known to be fatal to adults. He had known the danger of this preparation all his professional life and had always forbidden its use. He considered it ought not to be given in the British Pharmacopœia in its present strength.

Injury Caused by Hair-dye.

Actions are not infrequently brought against hair-dressers for damages for dermatitis caused by the application of hair-dye. They are based upon allegations that the hairdresser has been negligent, or alternatively upon breach of contract and warranty. Such an action was lately brought against an Oxford-street hairdresser who appears to have employed a dye containing 30 per cent. of para-phenylene diamine. His practice was to exhibit a printed notice disclaiming liability for the ill-effects of his hair-dyes; the notice stated that about two persons in a thousand suffer ill-effects; "as it is impossible to know these few without a test, we are willing to give this free trial on the customer's own responsibility." The plaintiff, who wanted her hair dyed blue-black like that of a friend of hers who had recently been so treated, was given a preliminary test. Dye was applied to a patch of skin behind the ear

the size of a sixpence. The result, according to the plaintiff, was dermatitis of the scalp, inflammation of the left ear and of the neck and chest, swelling of the eyelid, insomnia, shock, and nervousness. Mr. Justice Horridge left it to the jury to say whether, in all the circumstances of the case, the plaintiff had received adequate warning of the risk she ran in having the test applied; if she had had such a warning, they should find a verdict for the defendant. This they proceeded to do forthwith, without leaving the box, and judgment was entered for the hairdresser with costs.

Health or Justice?

The learned Recorder of Chichester, at a lecture given to the Royal Institute of Public Health which was reported in THE LANCET last week, gave his opinion that no change should be made in the legal rule which requires a doctor to disclose confidential details concerning his patients. Lord Justice Atkin, however, expressed a different view at the close of the lecture; he frankly stated that in some cases—notably those connected with venereal disease—the claims of public health far outweighed those of justice, and he favoured a change in the law. The Lord Justice provided a fresh argument in this controversy by referring to the secrecy with which certain evidence of official matters is treated. The solicitor's privilege is defended because it is in the interests of the administration of justice; the doctor's privilege is refused because it conflicts with the administration of justice; and yet the courts allow facts to be withheld—if, for instance, they concern the technical details of the equipment of our fighting services—without any reference to the administration of justice whatsoever. In the past few weeks there has been a prosecution under the Official Secrets Act of two spies, who have received severe sentences; part of the evidence was given behind locked doors. There has also been an application in the police-court concerning the ownership of certain naval documents, and again the proceedings were partly carried on in camera. May it not be just as much to the interest of the State to withhold facts dealing with a man's health as to withhold facts dealing with the construction of a submarine?

SOUTH AFRICA.

(FROM A CORRESPONDENT.)

Dengue in Durban.

DURING the first half of 1927 Durban suffered from a remarkable epidemic of dengue fever, the number of cases in the town and its vicinity being estimated at about 50,000. At the request of the town council Dr. A. J. Orenstein, of Johannesburg, has submitted a report on the measures that should be taken to eliminate mosquito-breeding and thus prevent the disease. In this report he says that it is now established with reasonable certitude that dengue is transmitted by *Aedes egypti*, more commonly known as *Stegomyia fasciata*. This mosquito invariably breeds in collections of water near human habitations, its flight is very limited, and it may safely be said that under ordinary circumstances it does not travel more than 100 yards. The larvæ are most commonly found in artificial receptacles, both indoors and outdoors, and will develop in very small collections of water—e.g., in tin cans or broken bottles, in ewers of water in unused guest rooms, in water-tanks, water-barrels, and holes in trees. The larvæ can remain submerged for several hours, and consequently may be difficult to detect in fairly large collections of water, such as rain-water tanks. The eggs are very resistant to unfavourable conditions and may remain dry for months and yet, when placed in water, hatch out healthy mosquitoes. The adult mosquito will, under favourable circumstances, survive for several weeks.

It used to be considered, says Dr. Orenstein, that *Culex fatigans* transmitted dengue, but experimental work seems to have disposed of this theory. Stegomyia is almost certainly the sole danger, and its habits c breeding are consequently of great importance i considering the preventive measures. As it appear that a very large portion of the European populatio of Durban and its vicinity were attacked by dengu during the first half of 1927 there is good reason t believe that an outbreak on a large scale is improbabl in the near future among the European population inasmuch as it has been shown by Siler, Hall, an Hitchens that the disease conferred immunity i 58 per cent. of cases, and modified towards mildnes subsequent attacks in the remainder. An outbrea might, however, occur among the native and coloure population, who apparently were not affected as muc as the European population by the last epidemic, an an outbreak of minor magnitude might occur amon the European population not attacked in the las epidemic.

Dr. Orenstein does not think that dengue should b made a notifiable disease, but he suggests that th medical officer of health should circularise the medica practitioners of Durban to ensure (*a*) that all case should, for the first three to five days of their illness be carefully protected by mosquito nets; and (*b*) tha the houses of such cases be searched for adul mosquitoes and for mosquito-breeding, with a view t its elimination. He recommends that the municipalit should offer to provide on loan mosquito nets fo patients and for the personnel of the mosquito search for "Protection of the sporadic cases against mosquit bites . . . is the best and most promising measure o preventing an epidemic of dengue."

It is suggested that the following amendments b made in the public health regulations:—

(*a*) No tanks, wells, barrels or receptacles of any kind fo the collection or storage of water shall be permitted excep in those districts which are without a public water-supply When such tanks, wells, barrels, or other receptacles for th collection or storage of water are permitted, they shall b made mosquito-proof to the satisfaction of the medica officer of health. Wells, where permitted, must be fitte with an approved pump.

(*b*) The throwing or keeping of tins, bottles, broke crockery, or any other object that may hold water an thereby become a breeding-place for mosquitoes, in an street, yard, alleyway, or any premises or property, whethe occupied or unoccupied, constitutes an offence.

(*c*) All premises, whether occupied or unoccupied, must b kept in such a condition as to prevent mosquito-breeding and the medical officer of health may give notice to th owner or occupier of such premises requiring him to correct within a definite time-limit, the conditions as specified i the notice. Failure to carry out the instructions containe in the notice shall constitute an offence.

(*d*) Roof gutters shall be so planned and constructed as t be self-draining and remain dry between rainfalls. Upo due notice from the medical officer of health, which shal specify a time-limit, the owner or occupier of the premise shall remove or repair roof gutters which hold water an might give rise to mosquito-breeding.

(*e*) If any owner or occupier refuses to carry out th measures specified in any notice under these regulations, o fails to do so within the time-limit imposed, the loca authority may, by persons duly authorised thereto, carr out such measures. The costs incurred in so doing shall b recoverable by the local authority from the person upo whom the notice was served.

Dr. Orenstein recommends that special inspector be detailed for work against stegomyia; it would b their duty systematically to inspect premises fo breeding-places, especially during the warm season The large swampy areas in the vicinity of Durba present difficult problems of mosquito control Without more data Dr. Orenstein is not prepared t suggest definite methods of permanent control, bu proposes an experiment on a small scale in two area where cattle could be kept out by fencing, sunflower could be planted, and collecting pools could be arrange at the lowest point, with clear banks, for any excessiv water. This might, he thinks, lower the surface wate sufficiently to diminish mosquito-breeding ver considerably. At present larvæ are controlled i swamps and ditches by means of crude oil, but i several instances he found larvæ where oil had bee recently applied, this being due either to the o

being blown away by the wind or to the film being broken by vegetation or dry twigs. A great many mosquito-breeding areas could, he thinks, be more economically treated by the application of some cheap emulsifying larvicide.

Retirement of Port Natal Health Officer.

Dr. H. E. Fernandez has retired from the post of port health officer at Durban, Natal, after a service of 32 years. He has seen Durban develop from the days when there was only a depth of 17 feet of water on the bar at the top of high tide to what it is to-day—when vessels of the deepest draught come inside to the wharf.

Bilharzia in the Transvaal.

Remarkable success has been achieved by the pioneer camp established at Rustenburg School for children suffering from bilharzia. Sixty patients drawn from 25 different schools in the district—which is particularly pestered by the disease—have been undergoing treatment at the camp, and are reported to have been completely cured in less than a month after their arrival. The Director of Sanitation for the Rand Mines submits that it is imperative for the authorities of the Provincial Council and the Union Government to coöperate in establishing similar camps throughout the Transvaal.

The Carnegie Corporation of New York has drawn up a five-year programme of grants in aid of scientific research in the Union of South Africa. The sum of £1500 is to be used in investigating the Bantu mentality, whilst £4000 will be set apart for a study of the "poor white" problem. The total amount to be expended will be £100,000, and £18,000 is to be used for encouraging the exchange of visits between South African and American scientific and educational authorities. Some of the funds will be devoted to social and medical work in East Africa.

BERLIN.

(FROM OUR OWN CORRESPONDENT.)

Diabetes in Germany.

IN the course of a recent address to the Society for Insurance Medicine Dr. Ullman drew attention to the increase in diabetes throughout the world, an increase most obvious, he said, in the United States. The late war caused a general diminution in the disease; thus in Berlin the mortality per 1000 rose from 1·0 in 1900 to 2·3 in 1913, but in 1919 had fallen again to 1·0. Since that time there has been another steady rise, bringing the death-rate to 1·8 per 1000. The age-period at which diabetes most commonly shows itself is from 40 to 45, and it attacks especially those classes whose work involves much mental strain. In America there is a saying that if prices on the stock exchange fall the amount of diabetes rises. The mortality is higher in towns than in the country, and Dr. Ullman considers that no race is especially liable to be affected, the apparent racial differences being actually dependent on varying habits of life. Up to 35 years of age both sexes are equally prone to the disease, but afterwards the mortality among males increases owing to the exertion and excitement of their work. Now that women are working more than formerly the difference between the rates for the two sexes is diminishing. It has not yet been ascertained whether diabetes is growing more severe in type.

Infectious Diseases in Berlin.

The last two years have seen a considerable increase of diphtheria in Germany, and especially in Berlin, where the number of cases is three times as great as in 1925. But, as Prof. Seligmann, head of the Berlin Municipal Laboratory, points out, the record of the last five years is on the whole a good one; diphtheria, indeed, reached its minimal incidence in 1924, and it may be hoped that the increase is only transient. 500 cases were notified in Berlin during September and October, 1927, as compared with 200 in the previous year, most of them being in the east and north-east parts of the city, which are thickly populated by poor people. School-closure is sometimes adopted by the municipal educational authorities, but they do not approve of this measure as a rule as it does not seem to be very effective and may lead to infection being spread more widely. The clinical course of the disease has grown worse, and the case-mortality has been higher in Germany than elsewhere. The prevalent organism seems to be of a specially malignant type; possibly, too, the resistance of the population has been lowered by the privations of the war and of the period which came after it. To combat its consequences antitoxin is given gratis to indigent families, and pamphlets warning parents against negligence are distributed in the schools.

Last year's figures show that the incidence of scarlet fever and measles in Berlin was much as usual. Notifications of infantile paralysis, of which an epidemic occurred at Leipzig and elsewhere in Germany, are seen to have increased but little. Dysentery and typhoid fever have been kept under control by regulation of the water and milk-supply, but meat-poisoning and paratyphoid have been on the increase. If the people of Berlin would refrain from eating raw meat in the form of "beefsteak à la tartare," the amount of poisoning would diminish.

The Soft Palate in Diagnosis.

In a paper read before the Berlin Medical Society Dr. Neuda pointed out that examination of the soft palate will often give useful information about general as well as local diseases. The colour of the palate may be altered, showing either hyperæmia or anæmia; it may look œdematous, and the junction with the hard palate may disappear or else become more obvious. Increase of fat in the soft palate suggests metabolic disorder, and also occurs in cancer of the stomach. In duodenal ulcer the soft palate is hyperæmic; large spots of hyperæmia indicate recent syphilis, whilst small spots show congenital syphilis. The palate is yellow, of course, in diseases of the gall-bladder.

SCOTLAND.

(FROM OUR OWN CORRESPONDENT.)

Edinburgh Health Week.

THE Edinburgh Health Week has included a full programme of medical and hygienic conferences and demonstrations. The Society of Medical Officers of Health, the school medical officers, and those lay and medical men and women associated with child welfare and maternity service, have all found a convenient platform and good audiences. But the outstanding feature of the week has been the health and hygiene exhibition in the Waverley Market. Edinburgh is very fortunate in having so fine an exhibition hall in a position so central. The daily average of visitors even in the first few days approached 10,000, and the exhibition deserves their patronage. It includes most of the leading departments of civic activity affecting health and the prevention of disease. The tuberculosis sections under Dr. John Guy, the children's sections under Dr. Leonard Findlay, and many of the others attracted continuous crowds. The cookery exhibits and demonstrations under the Atholl Crescent School of Cookery were among the best of the relatively "lay" sections. Dr. William Robertson, the medical officer of health, and his very active collaborators are to be complimented on the success of a first-class exhibition. It is the largest demonstration of civic hygiene that the Edinburgh Corporation has, in its official capacity, organised within the last 30 years.

Industrial Health Education Society.

This society took advantage of the Health Week to organise a meeting in the Usher Hall. In numbers the meeting was not large, but all those present were individually interested. The Secretary of State for Scotland made a telling appeal for support and encouragement. Men of all parties, creeds, and classes

were joined together for one common purpose, and in that appeal to the general citizens of the country they would be repaid a thousand-fold if all would take action personally in their own spheres. Sir Thomas Oliver, in his usual lucid and effective way, gave a few good illustrations of how preventive medicine had been applied to occupations and how "phossy jaw," lead poisoning, and other conditions had been reduced the moment detailed scientific attention was given to the manufacturing and working processes. Mr. William Graham, M.P., emphasised the value of the work being done by the Medical Research Council and the Industrial Fatigue Research Board. It is gratifying to learn that the lectures by medical men for the society now run into hundreds a year and the demand is steadily increasing. Scotland has the credit of originating this society.

The Cream Regulations.

The new Cream Regulations seem to have caused much more concern to Scottish than to English producers. The complaints of the trade are persistent, and it is disappointing to note that producers and those that express their case in print seem to believe that the English Ministry of Health has jurisdiction in Scotland. They seem unable to learn or to believe that on the day that the Ministry issued their Preservative Regulations for England and Wales the Scottish Board of Health issued a parallel and independent set for Scotland. Scotsmen are never tired of boasting about their independence, but they seem to prefer government from London. There is, however, one really important point: in Scotland there never has been, as in England, any regulation permitting boric acid (maximum 0·4 per cent.) in "double" cream. For all these years, however, the Scottish producers have assumed that they were legally entitled to add boric acid. Now that they are expressly told that what has been the law all along under the Food and Drugs Acts is to be definitely enforced under the new Preservative Regulations, both English and Scottish, they cry out more lustily instead of setting themselves to devise better methods of production, manufacture, storage, and transport. The milk trade is always resentful of interference. Every reform of its methods has to be initiated by smashing blows from without. Probably, as the Scottish cream market is about 50 per cent. English, Scotland may for a time suffer more. But there are some large producers who welcome the new regulations. A point to remember is that these are not aimed at the small or large quantities of preservatives, but at the evil conditions of production that make any preservative necessary. Meanwhile the prosecutions for adding preservatives to "mince meat" are proceeding and there is little doubt that less amounts of unwholesome scraps are finding their way into the mince-heaps.

Public Health Services.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED JAN. 21ST, 1928.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 405; scarlet fever, 2007; diphtheria, 1488; enteric fever, 44; pneumonia, 1550; puerperal fever, 53; puerperal pyrexia, 118; cerebro-spinal fever, 5; acute poliomyelitis, 6; encephalitis lethargica, 28; dysentery, 6; ophthalmia neonatorum, 101. There was no case of cholera, plague, or typhus fever notified during the week.

The cases of small-pox were notified from the following 20 counties:—London 2 (Lambeth, St. Pancras), Chester 1, Derby 16, Durham 85, Hertford 11 (Barnet 10, Ware 1), Lancaster 35, Leicester 7, Lincoln, Parts of Lindsey 3, Middlesex 2 (Edmonton 1, Heston and Isleworth 1), Northampton 20, Nottingham 16, Stafford 3, Surrey 1 (Beddington and Wallington), Warwick 28, Worcester 1, Yorks North Riding 14, West Riding 57, Brecknock 12 Glamorgan 27, Monmouth 64.

The number of patients at the Infectious Hospitals o the Metropolitan Asylums Board on Jan. 24th–25th wa as follows: small-pox, 3; scarlet fever, 1798; diphtheria 2526; enteric fever, 21; measles, 1302; whooping-cough 140; puerperal fever, 13 (plus 10 babies); encephaliti lethargica, 70; poliomyelitis, 2; "other diseases," 4 At St. Margaret's Hospital there were 9 cases of marasmus and 18 babies (plus 11 mothers) with ophthalmia neonatorum

Deaths.—In the aggregate of great towns includin London there was 1 death from small-pox, 4 (1) fro enteric fever, 94 (39) from measles, 4 (1) from scarle fever, 21 (5) from whooping-cough, 51 (13) fro diphtheria, 51 (5) from diarrhœa and enteritis unde two years, and 126 (19) from influenza. The figure in parentheses are those for London itself. Th death from small-pox was reported from Bradfor C.B. The fatal cases of enteric fever outside Londo were reported from Brentford and Chiswick, Leed and Sheffield one each. Of the 55 fatal cases o measles outside London, 16 were reported fro Bristol, 7 from Manchester, 1 from Salford, 6 fro Warrington, 4 from Sheffield, 3 each from Tottenha and Derby, while the figures from Glasgow and Dubli for the same week were 35 and 14 respectively. Th number of stillbirths registered during the week wa 291 in the great towns, including 41 in London.

We learn from Dr. J. J. Buchan that up to Jan. 30t there had been three deaths from small-pox of inmat of the North Bierley Institution at Clayton, just outside th Bradford boundary, after their transference to the small-po hospital. They were debilitated subjects, aged 71, 73, an 75 years respectively, all of whom had been vaccinated i infancy.

BIRMINGHAM TUBERCULOSIS DEPARTMENT.

AN article appeared in THE LANCET of Nov. 12t 1927, headed "Tuberculosis in Birmingham," whic contains several statements regarded by the medic officers of the Tuberculosis Department as giving a unfair impression of their work. It appears tha certain of these statements have been misinterprete The fact has been missed that the article was a surve of the position of antituberculosis work in genera and any criticism of the Birmingham methods forme a part of such general criticism.

ROYAL MEDICAL BENEVOLENT FUND.—At th last meeting of the Committee 43 cases were considere and £630 voted to 32 applicants. The following is a summa of some of the cases relieved:—

Widow, aged 56, of L.R.C.P. who died in 1901. Up to 19 relied on boarders for her maintenance, but owing to ill-hea has had to give up this work, and her income is now reduced about £21 per annum from investments. Lives with an ag father, aged 82, who requires constant attention. Has contribute to her own support. Voted £5 pending furth inquiries.

Widow, aged 55, of M.R.C.S. who died in 1905. Apart fr an annuity of £30 per annum from an aunt, is dependent her earnings by needlework. Rent 17*s.* 6*d.* a week, but su lets two rooms for 10*s.* a week. Voted £26 in quarterly inst ments.

Widow, aged 52, whose husband was in the Indian Medi Service and died in 1921. Only income pension of £90 per annu from War Office. Rent at present £52 per annum. One s married, with one child, but out of employment. Asked immediate help and was voted £10 pending further inquiries.

L.R.F.P. & S. 1890, lady, aged 77, who mostly practis abroad. Since 1921 has not been able to do any work and h now come to the end of her resources. At present living w a brother, but writes, "If possible I do not wish to be a burd on him, I should be grateful if the Fund would grant me so assistance, though I am sure you will quite understand I not like to ask for help." Voted £36 in quarterly instalments

Daughter, aged 64, of L.S.A. 1826 who died in 1873. H earned her living for the past 35 years as governess-compani and on having to give up this work was persuaded by frie to take a small house and take paying guests, who promis her £130 per annum; these allowances have been gradua reduced and the amount now received is only £26 per annu On account of failing health the last guest was requested leave, and a friend found this lady penniless and several sm bills owing. The friend raised a small fund to meet immedi needs and writes to the Fund to say that this was being disbur at the rate of 10*s.* a week, but was almost exhausted. Vot £30 in quarterly instalments.

Subscriptions may be sent to the hon. treasurer, Charters Symonds, at 11, Chandos-street, Cavendis square, W. 1.

Correspondence.

"Audi alteram partem."

TREATMENT OF THE MALARIAS.

To the Editor of THE LANCET.

SIR,—The effective treatment of malaria in its various manifestations is being keenly discussed in the columns of the medical press. I have read with interest the leading article in your issue of Jan. 14th, and Dr. Manson-Bahr's comment upon it. I have myself been using plasmochin for some time and am by no means convinced that the results obtained by its use are any better than those obtained by quinine with iron and arsenic. It is admitted that plasmochin alone does not kill the chizonts of malignant tertian malaria, though it apparently does the gametocytes, the crescents. But what is the use of destroying the crescents—apart from preventing anopheline infection—if the rings which produce them are unhurt? The chizonts will simply produce more gametocytes. The proper method is to destroy the former and then no more of the latter will be formed, and those already existing in the blood will soon disappear. It is a case of the goose and the golden eggs over again. The fact that it is necessary to combine the plasmochin with quinine points its own moral.

There is no doubt also that plasmochin is a more dangerous drug than quinine, its therapeutic and toxic doses being very near together. Dr. Manson-Bahr says that toxicity seems to be entirely eliminated by the mechanical combination of plasmochin with small quantities of quinine sulphate, in the form now known as "plasmochin compound." Why this should be is not clear, and that it is not so in all cases is shown by the fact that I have recently had three well-marked cases of cyanosis and one of sickness after the use of plasmochin compound. I do not say that this matters very much, but on the other hand, in certain individuals it might be serious, and it is a danger that one cannot ignore.

It is quite possible, of course, that in cases which seem to resist quinine or even in ordinary cases, a combination of these two drugs will act better than either given alone; but time only and careful observations will show this. The same may be said of relapses. If it can be demonstrated that these never appear after plasmochin treatment, or rather after plasmochin compound treatment, then the combination will be proved to be better than the ordinary quinine and arsenic treatment, and should be generally adopted. I personally have had one doubtful case of relapse, but as the blood was not tested I cannot say this for certain. There is also the question of expense, a very important one of course.

I have also been extremely interested in the recently reported outbreak of malaria in Barbados, and especially so as I was the first to point out, in 1901, that the reason the island was free from malaria was because there were no anopheles mosquitoes present there. I dealt with the question in a paper entitled Malarial and Filarial Diseases in Barbados.[1] I thought it possible that there might be something in the water of the island prejudicial to the development of the anopheles, so I took a supply of this over to St. Vincent, an adjacent island, where *Anopheles albimanus* was abundant. I found that the larvæ of this species of mosquito lived and developed in this quite well and ultimately pupated and became adult insects. In a note on the Absence of Anopheles in Barbados, W.I.,[2] I said: "This indicates that it will be a very serious thing for Barbadoes if by any chance anopheles mosquitoes were ever introduced to the Worthing swamp." This has apparently now happened, 25 odd years since I made that statement.

[1] Brit. Med. Jour., 1901, ii., 687.
[2] Ibid., 1902, i., 200.

Dr. Andrew Balfour,[3] has indicated how the invasion has probably taken place. Small sailing vessels come into the harbour close to the shore, and anopheles brought over by them from some of the other islands must have escaped, bred, and gradually extended their range to what would now appear to be a fairly extensive one. People returning to the island with malarial parasites in their blood have infected the mosquitoes, and so the disease has broken out indigenously. If the excellent suggestion, of making ideal breeding places, artificially constructed, in close proximity to the wharves, made by Dr. Balfour when he visited Barbados some years ago had been carried out, the infection of the island might well have been saved. It has always seemed strange to me that anopheles have not been introduced before in this way, and it is quite possible they have been, but that they have never been able to establish themselves permanently. Their introduction and permanent settlement this time effectively kills the stupid myth that Barbados has enjoyed immunity from them because of the presence of the small fish called "millions" in the different pools of water scattered through the island. Even in my time I could always get two or three species of culicine larvæ in the pools inhabited by these fish, and now the anopheles are holding their own as well.

There is no use crying over spilt milk, however. What is required now is to stamp out the anopheles, and this, though it will be an expensive matter, is a fairly easy one. The collections of water are small and so can be dealt with easily by drainage, oil, &c. It is not clear yet if the larger collections of water, the swamps at Worthing, are infected or not, but, if so, there will be a greater difficulty in dealing with them. Because of the absence of rivers and big swamps and stagnant water generally, there can be no place easier than Barbados in which to conduct an anti-anopheline campaign. Perhaps it would be as well, however, to send out an expert or experts from home to conduct this.

I am, Sir, yours faithfully,

G. CARMICHAEL LOW.

Brook-street, W., Jan. 26th, 1928.

THREE CONCEPTIONS OF TUBERCULOSIS.

To the Editor of THE LANCET.

SIR,—Of the three conceptions of tuberculosis, suggested by Dr. E. Ward in his paper read before the Plymouth Medical Society (THE LANCET, Jan. 21st, p. 125), the Edwardian is surely the wisest and nearest the truth: "A widespread disease . . . *always dangerous . . . when causing symptoms*" (italics mine). It is dangerous to neglect the symptoms in the same sense that it is dangerous to run past a danger signal on the line. Dr. Ward suggests the term "minor tuberculosis" for the disease in those patients who have become infected with tubercle bacilli, but who have sufficient resistance to recover, with little or no treatment. That such cases do exist there can be no doubt, but the point I would like to emphasise is that when signs or symptoms, or both, have made their appearance, the case can no longer, with safety, be regarded as a "minor" one. In the absence of the gift of prophecy, it is not possible to decide whether the resistance will, or will not, continue to hold its own unaided.

Dr. Ward quotes four cases in whom the precautions taken were as follow: 1. "Commonsense precautions." 2. "Became much more careful." 3. "Continued work under observation and an improved régime." 4. "A short holiday and a few adjustments." All these four cases showed definite signs or symptoms. In one case tubercle bacilli were present in the sputum, and in another hæmoptysis had occurred. The result of an expectant policy in these four cases was happily successful; in fact, Dr.

[3] Brit. Med. Jour., Jan. 21st, p. 114.

Ward may be said to have got away with it; but I think every sanatorium worker will agree with me that the risks run were unjustifiable even by the fortunate results.

The other side of the picture is all too familiar. The cases, hopelessly advanced, obviously ill, with small chances of recovery, which are frequently sent, too late, for admission to sanatoria, usually give just such a history as did the four cases presented by Dr. Ward. Unfortunately, that history refers to a period of three, four, or more years ago. The intervening time has seen the gradual and insidious undermining of resistance which should, long ago, have been reinforced by adequate treatment. Interrogation elicits the fact that the onset of the significant signs and symptoms mentioned by Dr. Ward was met by the treatment prescribed by him. The urgent necessity of sanatorium treatment with prescribed rest and graduated exercises, and education in avoidance of infection, was never suggested, but the patient was fatally reassured and encouraged by such advice as "A holiday in the country will soon put you right," "Plenty of fresh air and exercise is all you need," or "Take a sea voyage and forget all about it." So time was lost, and the cases which may then have been minor became very much major.

It is significant that the four cases mentioned by Dr. Ward belong to the professional class. This is the class in which successful results may well be expected. Intelligent, eager to get well and resume work, keen to coöperate in the comprehended restrictions of the régime, its members are usually the most responsive to sanatorium treatment. It is also, unfortunately, the class for which there are least facilities for obtaining wise and informed direction, and which, in consequence, is often allowed to waste the valuable years by a too complacent policy of "Wait and see."

I am, Sir, yours faithfully,

H. O. BLANFORD.

Heatherside, Camberley, Surrey, Jan. 26th, 1928.

DAMAGES TO BONES AND REPUTATIONS.

To the Editor of THE LANCET.

SIR,—I have read with admiration Prof. Hey Groves's dissertation in your issue of Jan. 28th. The subject on which he writes is a bugbear to the country practitioner living, as he may do, miles from an X ray plant. The difficulty of transit and also of expense (which does not apply to the rich or the fairly well-to-do in the country) is a matter of concern to the farmer or the country labourer, who, we all know, are in rather a parlous state at the present time. The absence of electricity or even gas in many of our country villages render such cases (together with a possible litigation) a veritable nightmare to the doctor attending.

In the country many of the victims of such accidents cannot even afford to pay the medical man in attendance an adequate fee. Much less can they afford the cost of a car to take them to the nearest hospital for an X ray photograph; and again, after a few days, a repetition to see that the parts are keeping their proper alignment. The country man is an obstinate individual. He prefers to be ill at home to lying in a hospital bed, however much he may be told the advisability of it. And yet, in these days, he expects the same treatment and attention. If he does not get it, he maligns his medical attendant, often through the medium of his relatives and friends, from lady bountiful to the village drunkard.

I cannot say to my knowledge that I have myself suffered from such folk, but I know plenty who have. Prof. Hey Groves says, "Efficient portable X ray plant ought to be available whenever needed," and he suggests an ambulance service equipped. This is excellent and ideal. But how is this service to materialise?—I am, Sir, yours faithfully,

R. T. RICHMOND.

Seascale, Cumberland, Jan. 28th, 1928.

SPECIFICITY OF ANTI-CANCER SERA.

To the Editor of THE LANCET.

SIR,—I gather from recent conversations with oth scientific workers that it may save their time as w as mine, and avoid future correspondence, if y permit me to epitomise here my present views as the specificity of anti-cancer sera. With the assistan of Miss A. C. Kohn-Speyer I have recently repeat all the crucial experiments and have come to t following conclusions, which confirm and ampl those previously arrived at.

I find that the serum of a rabbit which has be repeatedly inoculated with mouse cancer fragmen may contain three factors which are toxic to can cells cultured in vitro.

1. A factor naturally present in the sera of ma adult rabbits, which is toxic to any mouse cell. was rather surprised to find that this factor is ve labile and can be destroyed by heating the serum 56° C. for 30 minutes. Addition of fresh rat or mo serum to the heated rabbit serum does not reactiva this toxic element.

2. *Anti-mouse-group Bodies.*—These are not spe fically anti-malignant and very stable; they survi heating to 56° C. for 40 to 60 hours.[1]

3. *Anti-malignant-cell Bodies.*—These are specific the sense that they kill malignant cells and not norm tissues, but they are toxic to many varieties malignant cells and not only to the mouse can cells which were used as an antigen. Such antibod resist heating at 56° C. for four to seven hours.[1]

The first of these three elements is easily demo strated by applying pure serum from an adult norm untreated rabbit to mixed cultures of mouse can and normal tissues. The second by applying t serum of an immunised rabbit after heating t antiserum for eight hours to destroy the first a third groups of toxic factors, fresh rat serum bei added as complement. The presence of the thi factor is less certainly proved since it is more lab than the second and cannot therefore be isolated heating. Antisera made in rabbits are, in my expe ence, less specific than those made in sheep or in ra If, however, great care be taken that the antig injected into the rabbit is pure (i.e., *to wash the mo cancer fragments free from blood and to avoid excess stroma with sedulous care*), I have found that so specificity can be observed—viz., that migrati cancer cells are killed more rapidly than the norm tissue cells. If the antigen is carelessly prepared specificity may be demonstrable. Diluting t anti-serum does not help much since the anti-spec element is still dominant and tends to mask t anti-malignant factor.

The existence of antibodies which have a spec affinity for malignant cells is, however, demonstra in other and surer ways. The clearest proof is suppli by using a particular anti-cancer serum on tiss cultures of cancer cells from a species other than th from which the antigen was taken. Thus if hum breast cancer is injected into a sheep and the shee serum is thereafter applied to mixed cultures mouse cancer, mouse heart, and mouse kidney, or rat sarcoma, rat heart, and rat kidney, every tumo cell is killed in a few minutes, the normal ce survive. Here no anti-mouse or rat element present, unless the sheep's blood originally contain it, and even if so, this naturally existing toxic elem can be eliminated by heating the antiserum for hour and recomplementing with rat complem Conversely if anti-mouse cancer serum from a rabbit applied to tissue cultures of human breast can cells it causes the death of the human cancer ce Again, if anti-Jensen's-rat-sarcoma serum from a she is fully absorbed with rat tissues or even with blood corpuscles and the absorbed serum is th applied to a mixed culture of mouse cancer and mo normal tissues the cancer cells are killed rapidly; t normal tissues are much less, if at all, damaged.

[1] Kohn-Speyer THE LANCET, 1927, ii., 377.

A further proof is that if the serum of a rat hyperimmunised against Jensen's rat sarcoma is applied to cultures of mouse cancer many of the cancer cells are damaged. This can only be as the result of anti-malignant elements in the hyperimmunised rat serum, for an untreated sarcomatous rats' serum never injures cultures of mouse cancer. If a rat instead of a rabbit be selected as the animal in which to make anti-mouse cancer serum a more evident affinity for cancer cells can be demonstrated; presumably the rat being nearly related to the mouse has less tendency to form anti-mouse bodies than the rabbit has.

In vitro results should only be regarded as giving useful indications, and should when possible be confirmed by observations made in the living body. In this instance adequate confirmation of this sort is available, since many rat sarcomata and in one instance a spontaneous rat mammary carcinoma have been got rid of by inoculating anti-human-breast-cancer serum into them—i.e., a serum which contains anti-malignant but no anti-rat elements.

I am, Sir, yours faithfully,

THOMAS LUMSDEN.

The Lister Institute of Preventive Medicine,
London, S.W., Jan. 24th, 1928.

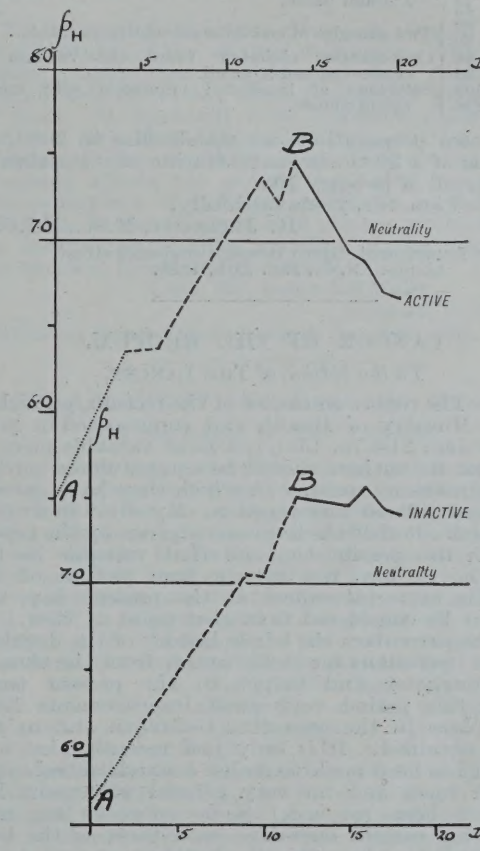
THE VITAMIN D VALUE OF COD-LIVER OIL.

To the Editor of THE LANCET.

SIR,—The difficulty in assaying the vitamin D value of cod-liver oil, or of other preparations claiming that vitamin, by any of the methods described by Miss Leigh Clare and Miss Soames in your issue of Jan. 21st (p. 150) is well illustrated by their statement, that after the use of 200 rats only the roughest classification of seven samples of oil could be obtained.

We were very forcibly compelled to recognise this difficulty when we began some four years ago to prepare from cod-liver oil a vitamin D concentrate. It was necessary, if this product was to give clinical satisfaction, to ensure its adequate content of vitamin D. This could only be achieved by assaying for vitamin D the oil used as raw material, by effectively controlling the manufacturing process, and by standardising the finished product. For such purposes a biological method of some accuracy and considerable rapidity was essential, in the absence of even the beginnings of a chemical test. After a survey of the various techniques then in use or proposed, it seemed clear that the only one likely to prove of service was that suggested by Zucker and Matzner.[1] This depends upon the change from alkalinity to acidity (pH over 7·0 to pH below 6·0) in the fæces of rats which have been placed upon certain diets high in calcium and low in phosphorus, and free from vitamin D. I personally had the advantage of instruction in the details of the test from Dr. Zucker himself in the laboratories of the College of Physicians and Surgeons, Columbia University, New York, and, after some slight modifications made in the light of experience, we adopted this method of assay. The procedure is fully described in a recent paper by myself and another.[2] After more than 2000 determinations of antirachitic potency carried out upon a wide variety of substances, and frequently checked both against chemical methods (bone analysis) and against histological methods (the so-called "line" test), we have been unable to avoid the conclusion that the rapidity and accuracy of this test gives it advantages over every other procedure. We may add that, since the publication of the paper referred to above, we have extended our observations upon the specificity of the test, and have found it quite negative in the cases of several inactive vegetable and animal oils, and positive in the cases of irradiated ergosterol, irradiated plant sterols, and other sources of vitamin D.

In order that determinations may be carried out in the shortest possible time a plentiful supply of young rats is essential. These are placed upon the experimental diet as a routine procedure, so that animals which have reached the desired fæcal alkalinity are always immediately available for use. In this way an estimation can be carried out with accuracy in five to seven days, using two, or at most four, animals. A considerable degree of skill in the technique is, however, essential, as is accurate (and incidentally expensive) apparatus for the electrometric determination of the fæcal pH. The progress of two typical assays from our routine test sheets is readily followed from the accompanying graph.



At A the animals have been placed on the experimental diet, and in the period A–B the pH of the fæces is steadily rising. At B the dose of the substance to be tested is given, and in the ensuing six days a rapid change in pH from an alkaline to an acid value is observed with the active, but not with the inactive, material. The test will only give the accuracy of a pharmacological assay if the dosage be adjusted so that the pH falls to below 6·90, but not below 6·60. If the fall is not to a point between these limits, the test must be repeated with the dosage adjusted to give the required fall; we have found the drop in pH to be reasonably closely proportionate to the vitamin D content over this range only. This point is being made the subject of a further communication from these laboratories to the Biochemical Society. The test, like the two colour tests for vitamin A, may be open to the objection of a want of specificity, but this does not seriously affect its usefulness. There is never any difficulty in discriminating between the "lactose effect" or "free acid effect" produced, as shown by Bergeim[3] and Zucker, Johnson, and Barnett[4] respectively, by relatively large quantities of appropriate substances and those produced by relatively small quantities of vitamin D-bearing material.

[1] T. F. Zucker and M. V. Matzner: Proc. Soc. Exp. Biol. Med., 1923, xxi., 186.
[2] H. Jephcott and A. L. Bacharach: Biochem. Jour., 1926, xx., 1351.
[3] O. Bergeim: Jour. Biol. Chem., 1926, lxx., 35.
[4] T. F. Zucker, W. C. Johnson, and M. Barnett: Proc. Soc. Exp. Biol. Med., 1922, xx., 20.

We entirely agree with the observations of Leigh Clare and Soames that there is great variation in the vitamin D content of cod-liver oils. We recently made a comparison of a number of oils with those which we have been using as our own raw material, as well as with a standard based on our examination of more than 200 samples of cod-liver oil during the last three years. Their relative vitamin D potency was as follows :—

A	100	Samples of our own oil before treatment.
B	113	
C	111	
D	108	
E	78	"Finest medicinal cod-liver oil"—one sold under a brand name.
F	53	
G	45	
H	90	Two samples of cod-liver oil sent from Cuba.
I	80	
J	86	Concentrates claiming twice the vitamin D content of cod-liver oil.
K	92	
L	500	Solutions of irradiated ergosterol sold under brand names.
M	230	

Our own preparations we standardise to 2000, on the basis of a 20 times concentration of "standard" cod-liver oil of potency 100.

I am, Sir, yours faithfully,

H. JEPHCOTT, M.Sc., F.I.C.

Ostelin Department, Glaxo House, Osnaburgh-street, London, N.W., Jan. 24th, 1928.

CANCER OF THE RECTUM.

To the Editor of THE LANCET.

SIR,—The report on cancer of the rectum, published by the Ministry of Health and summarised in your issue of Jan. 21st (p. 152), is a most valuable piece of work and its authors should be congratulated on the very painstaking manner in which they have carried out a most difficult investigation. My object in writing is to point out that the impression given by the report is much too pessimistic, and that valuable as the report is, it does not give a true picture of the prognosis in rectal cancer at the present day, nor should it be considered from that point of view.

The report covers the whole history of the development of operations for rectal cancer from the time of the Allinghams and Cripps to the present time. During this period very great improvements have taken place in the operative technique and in the results obtained. It is only just recently that any attempt has been made to realise a standard technique in such cases and no very general agreement has even yet been reached. Some surgeons are now recognising certain operative procedures as the best ones, but it is only within the last few years that any large numbers of cases treated by one standard technique have been performed. The figures in the Ministry's report include all the early cases, such as the operations of Allingham, Cripps, and Kraske, which have been completely out of date for a long time. It follows that both the mortality-rate and the survival-rate in the tables are quite unduly pessimistic as regards present-day conditions. Were it possible to compare the figures for the last decade with one of the earlier decades there would be a very marked difference, which, of course, cannot be brought out in the tables. For instance, the chief causes of death in the mortality tables are sepsis and shock, which account for no less than 370 out of a total of 452 deaths. Both these causes of death have been very greatly reduced by modern technique, and deaths from these causes should seldom occur at the present day. Again, the more extensive resections of the present day give a much better survival-rate than is indicated by the figures in the report. The chances of survival after a perineal operation for an average case of cancer of the rectum on a five years' basis (the tables only take a three years' basis) is over 50 per cent., while the chances for a case above the average, that is to say, an early case, is nearly 75 per cent.

Another most important factor cannot be allowed for in the tables. In the early days of operations for rectal cancer only the very favourable cases where t growth was within easy reach and comparative small were operated upon, the remainder being co sidered inoperable. With the improvement in t technique the limit of operability has been very mu extended, so that a far large proportion of cases a now operated upon than was formerly the case. Th while it improves the true figures—namely, the numb of cases cured out of 100 cases of cancer diagnos (a figure which up to the present no one has work out)—tends to give *a worse impression* of the figu based only upon cases operated upon. The tabl show clearly the advantages of the perineal operati over the combined route for the removal of rect growths where this is possible, and this conforms modern experience.

There is one conclusion from the tables whi I believe to be entirely erroneous. The tables appe to show that cancer of the rectum in young perso does not kill more rapidly than in older patien This is contrary to all surgical experience. In r experience most of the young patients (under 30 yea of age) who get cancer of the rectum are found to hopelessly inoperable when first seen ; this cannot shown in the tables. I have personally never seen case of cancer in a patient under 30 who survivl more than a few months, whether operated upon or n

I am, Sir, yours faithfully,

J. P. LOCKHART-MUMMERY.

Hyde Park-place, W., Jan. 28th, 1928.

COMMISSIONS IN THE R.A.M.C.

To the Editor of THE LANCET.

SIR,—Colonel J. Griffiths's letter of Jan. 2 showed the wisdom that any of his old fell students of years ago would expect. He thin the advantages of the R.A.M.C. are "almost beyo the conception and belief of the medical stude Would-be entrants are, however, few," and lest t splendid post-graduate college is scrapped, he wo pass some or all of the medical officers for overs through it. Certainly every free-trade nation h in the past, been forced to economise on its defens services. The benefits of the Service career regular, and now increased, pay, no bills to send fixity of tenure, constant help from friendly colleagu use of laboratories, and post-graduate instruct without cost. The drawbacks are changes of stat (to many their own compensation) and involunt retirement, by which the general practitione best years are lost. But there is the pension.

I submit that the attitude to the defensive servi is wrong. Recruiting is encouraged, the men well looked after in their services, but places are provided fo them afterwards. Vocational train is provided by the services. The Admiralty quali men for the City and Guilds of London Institut ecrtificate, which puts its electricians on an equal with others from outside when applying for po Why should not we see that the same thing is d for the best of the other ranks in the R.A.M.C. the sick berth staff ? I probed this when in Service, but the time was not auspicious. The Na has not the large scope of the Indian Service and R.A.M.C., but I cannot see why it is not joined w the Metropolitan Asylums Board, with which I ser for a short time in the war. It would take cour and time to make the change, passing officers fr one to the other every two or three years. Furth why should not officers be encouraged by th Directors-General to apply for billets in the hea or other services ; they will have done someth for their country in their spells of active serv And they would only capture civil posts if of spe record ; some would certainly succeed, for we h such conspicuously among us. And the more g men advertised the Services by winning good appo ments, the better would recruiting become.

I am, Sir, yours faithfully,

Piccadilly, W., Jan. 27th, 1928. W. E. HOME

AURAL SYSTEMIC INFECTION.

To the Editor of THE LANCET.

SIR—I am deeply indebted to a letter which appeared your issue of Jan. 7th from Mr. H. Ross Souper regard to the effects he obtained from the use of ntistreptococcus serum in cases of aural systemic fection.

A nurse at Cheltenham General Hospital became ill 3 A.M. on Jan. 1st with vomiting, sore-throat, eneral aching, and malaise. The following day there as follicular tonsillitis, and on Jan. 4th there was vere hæmaturia. On Jan. 6th there was acute ain in the right ear with slight œdema over the astoid, followed by profuse otorrhœa the following ay. On Jan. 10th cellulitis appeared on each side the nose, and spread over the whole face; small ebs formed over both cheeks and on the forehead. he patient had spasms of hiccough. On Jan. 12th iere was repeated vomiting. The temperature ictuated up to 104° F. On Jan. 13th streptococci ere recovered from blood taken from a vein in ie elbow on Jan. 11th. The patient now looked angerous ill, and I felt anxious about her recovery. n Jan. 14th 15 c.cm. of *Scarlet Fever* Antistrepto-occus serum (P., D. and Co.) were injected into ie glutei. The temperature fell to normal in 12 hours, id did not again rise above normal. The otorrhœa id the cellulitis of the face cleared up in a few days, ie hæmaturia ceased in 48 hours, and the albumin ll from 3½ parts to ½ per 1000. The improvement her whole condition was dramatic. I should ention that I had the collaboration of my colleague, r. N. H. Pike, in the treatment of the ear, and of r. J. B. Davey in the pathology of the case.

I am, Sir, yours faithfully,

Cheltenham, Jan. 30th, 1928. J. RUPERT COLLINS.

ITAMIN B AND THE ALIMENTARY CANAL.

To the Editor of THE LANCET.

SIR,—A number of communications have appeared ecently in which evidence was brought forward that itamin B exerts its action principally on the alimentary anal; thus Rowlands and Browning in your issue of an. 28th report dilatation of the stomach in vitamin B eficiency and refer to their previous finding of npaired motility of the intestines in this condition. is perhaps worth drawing attention to older work, hich has apparently been overlooked, in which very milar conclusions were come to, at a time when iochemical opinion inclined strongly to the view that itamin B (and the other accessory food factors) were ecessary for the normal metabolism of cells in general nd did not exert a selective action on the functions of pecial organs or tissues.

Thus Lumière [1] fed pigeons on decorticated rice and oticed a marked diminution of intake of food. There as evidence of stasis in the upper part of the digestive act. Trituration in the stomach was defective and ie onward passage of the bolus through the pylorus as greatly delayed. There was deficient glandular ecretion and hypotonus of the intestinal wall. A nall dose of extract of rice polishings provoked bundant glandular secretion and strong intestinal iovements which resulted in rapid evacuation of the lasses of polished rice lying in the upper intestine; err found in experiments on dogs [2] and I found in he case of rats [3] that in the absence of vitamin B the ntake of food was greatly diminished; when the itamin was restored to the diet food consumption as increased. Cowgill [4] utilised these results as a est for the presence of vitamin B in different food-tuffs. He found that the potency in promoting ppetite ran parallel to the potency in relieving symptoms in polyneuritic animals. Cramer and his co-workers showed in their important paper in THE LANCET [5] that in vitamin B deficiency there was lymphopenia, atrophy of the lymphoid tissues of the intestine and elsewhere, and defective absorption of fat. Both Cramer and I showed [6] that the stomach was dilated in this condition, and that there was probably "some defect in the power of the stomach to deal with its contents and propel them farther down the intestine." I suggested that the low food intake could be explained as follows: "The stomach is never empty; it is always partly distended with fermenting material. Hunger contractions do not take place, the craving for food becomes low, and the intake falls off."

The lowered food intake does not account for all the symptoms of the vitamin deficiency; Forster, for instance, found that dogs succumb more readily on a vitamin-free diet than when completely deprived of all food. It appeared from Cramer's observations and my own that the unhealthy condition of the intestine might result in toxic absorption which adversely affects the general health of the animal. The symptoms of beri-beri might be explained as being due to the absorption of poisons which damage the nervous or vascular systems, giving rise to the dry and wet forms of the disease.

I am, Sir, yours faithfully,

SAMSON WRIGHT.

Middlesex Hospital Medical School, Jan. 28th, 1928.

[1] Bull. de l'Acad. Méd., March, 1920; Presse Médicale, 1920, o. 20. [2] Jour. Biol. Chem., 1920, xliv., 255.
[3] THE LANCET, 1921, ii., 1208.
[4] Proc. Soc. Exp. Biol. and Med., xviii., 290.

THE APPARENT INCREASE OF CANCER.

To the Editor of THE LANCET.

SIR,—Will you permit me to say a few words on the annotation under this heading in your issue of Jan. 28th? It is to be regretted that my illustration of the difference between crude and standardised rates should appear to have done an injustice to Dr. Stevenson, and I will substitute, if I may, a comparison between similar rates for the buccal cavity in 1901–05 and 1925, as in your opinion it is preferable to take a group of years. In this period the crude rate per million rose from 113 to 142 while the standardised rate fell from 154 to 142, the standardised figures being 2834 and 2649, a fall which does not appear to be recorded in either of Dr. Stevenson's reports.

Your defence of the, to me, artificial division of sites into accessible and inaccessible rests on diagnostic facilities. There has been no increase of such facilities in regard to the buccal cavity, which must be regarded as a whole not only from the close anatomical relationship of its sites, but because, as a reference to the table given on p. 550 of the annual report for 1913 shows, even so recently as 1912, at no site in the group can the records be accepted as an accurate statement containing all deaths due to a primary cancer at that site and no others. There has been sufficient overlapping of sites to make it necessary to treat the group as a whole. Since 1901–05 there has been no increase of diagnostic facilities and no increase of cancer in the buccal cavity. At the other extreme there has been a marked increase of diagnostic facilities—e.g., X rays and bismuth meals, bronchoscopy, and genito-urinary surgery, and a coincident large increase of cancer at the sites corresponding. Diagnostic facilities may be a perfectly sound basis for instituting a comparison, but they do not form the distinguishing character between the groups termed accessible and inaccessible. The distinction made by the U.S.A. inquiry was between certain and uncertain diagnoses, a distinction which seems to me quite valueless for purposes of comparison.

I may add that a solution of the problem of the increase of cancer is not so much of importance in order to allay the alarms of the public as because it has a direct bearing on causation and hence on the direction in which research should move. It should be

[5] THE LANCET, 1921, ii., 1202.
[6] Loc. cit.

taken, if possible, out of the region of personal opinion; and we can start with the fact that cancer of the male buccal cavity has not increased from the beginning of the century up to 1925.

I am, Sir, yours faithfully,

London, Jan. 28th, 1928. D. F. SHEARER.

GASTRO-DUODENAL ULCERATION.

To the Editor of THE LANCET.

SIR,—I should like, as a general practitioner, to thank Prof. MacLean and his collaborators for their excellent and helpful article on the intensive alkaline treatment of gastric and duodenal ulceration. In the course of work as a hospital resident I have seen excellent results follow various other forms of medical treatment, but each of these required (*a*) special diet governed by long tables, (*b*) skilled nursing. These necessities make such treatment difficult for those whose work lies in small towns or villages scattered throughout Great Britain, and it was surely for such rather than for the pundits of Harley-street and Wimpole-street. It offers a method which can be quite easily carried out in the patient's own home, be that latter a two-roomed cottage.

Hundreds of general practitioners will be exceedingly glad if they can get immediate results as good as those put forward in the articles from St. Thomas's. Why should we be refused the information which will make this possible whilst cases are watched, like organisms under a microscope, for another 5, 10, 15, or 20 years? I, for one, feel deeply grateful to Prof. MacLean and his colleagues for having preferred to expose themselves to the accusation, by implication, of being unfair, unscientific, and extravagant. Very few can have read into the article in question any claim to infallibility.

One would like to hear from Dr. Ryle what proportion of men engaged in general practice can find the time, even if they have the inclination, to verify references given in the average bibliography.

I am, Sir, yours faithfully,

DONALD M. O'CONNOR.

Malmesbury, Wilts, Jan. 27th, 1928.

To the Editor of THE LANCET.

SIR,—May I, as one who was employed in general practice for 28 years and who has not long come from it, express the gratitude I felt on reading the paper by Prof. Hugh MacLean and his colleagues in the issue of Jan. 7th, the substance of which was so important and whose value to me was enhanced by the manner in which it was presented. My only regret was that such a fundamental matter was not settled years ago, for in retrospect one can see what relief might have been given to numbers of cases had one not been afraid of alkalosis, a bogy which is now laid low for ever.

To me it would be no surprise to hear that hundreds of people have been relieved already with an expeditiousness directly due to the fact that the paper was unencumbered with references. Time for reading is hard to find in any busy practice and my impression is that many do as I did; that is, read the papers with few or no references first and reserve those with a long list attached to them until one has the leisure to read them.

My recollection of Prof. MacLean's papers in the past is that they were rather of the latter kind, intensely interesting, but requiring much time to enjoy them thoroughly. Can we hope he may be persuaded to give us more in his recent vein? Were he to prove that other things which stay our hands at present are only bogies such relief, such gratitude would come, that few indeed will be found so churlish as to say this or that part of the work was only confirmatory—our sense of obligation would be too great.

I am, Sir, yours faithfully,

Guildford, Jan. 31st, 1928. HERBERT W. NOTT.

THE FUTURE OF MEDICAL PRACTICE.

To the Editor of THE LANCET.

SIR,—Dr. Cyril Doyle in your issue of Jan. 28 on the Future of Medical Practice asserts th "other clinics—e.g., tonsils and adenoids, dent maternity, and child welfare—are becoming increasingly unpopular with the patients and the practioners, so also are the poor-law hospitals." W regard to the latter point I agree with the stateme of Dr. J. C. Muir in THE LANCET of the same da that the poor-law hospitals are becoming increasing popular. Might not Dr. Doyle wait a few m years before he can judge so important a matte

I have had 12 years' experience of general pract and 18 years as medical officer of health and sch medical officer. When I first commenced my dut as school medical officer we had about half a doz patients in attendance at the clinics; now we aver between 80 and 90, disproving the unpopularity f the clinics. The general practitioners in this borou frequently refer cases to the clinic for treatment.

Dr. Doyle states that "the reasons for t unpopularity of the clinics are not difficult to tra because the general practitioner who has charge f the patient after clinic treatment hears the patien ideas and is able personally to observe the result f such treatment." But the operations for tons and adenoids are usually performed at hospitals a the cases are notified to the school medical offi to follow up—not to the general practitioner.

He further states "that compulsory medi examination at school sometimes leads to expressio of opinion by the school doctor which differ fr opinions previously given by the family practition These occasional conflicts of opinion do much towa weakening faith in school doctors." This is usua the reverse. He also says that "many a moth brings her child to me to enucleate its tonsils or 'give it an overhaul' rather than go to the provic centre." I have always understood that consulta would only see cases referred to them by gene practitioners.

Statistics show that the greatest reduction in mortality-rate is chiefly in the poor localities, beca it is the poorer people who are encouraged to atte the welfare centres. Our infant mortality-rate 1904 was 154 and 56 in 1926. I should like Doyle to visit any of our clinics to see and hear himself as to the alleged "unpopularity of clinic He would find that it is not for "the desire to something for nothing," as he states, but to obt treatment that would otherwise not be obtain I would further suggest that he obtains and re Sir George Newman's report on "The Health of School Child."—I am, Sir, yours faithfully,

W. BENTON,
M.O.H. and School M.O., County Boro
Jan. 30th, 1928. of East Ham.

NOMENCLATURE.

To the Editor of THE LANCET.

SIR,—Your leading article of Jan. 28th sta the position with an admirable clearness and brea of vision, but such clearness is by no means gene and it sometimes happens that scientific controver are entirely based on the different meaning attribu to the same word by various writers. The Minis of Health has recently and most usefully defi what is meant by "quiescent, arrested, and cure when applied to pulmonary tuberculosis, and it wo be similarly advantageous if an equally authoritat body would bring up to date the accepted meaning many words currently used in scientific medici The duties of such a definition committee would largely dictionary work, plus recommendations. finality would be attained or even aimed at. Almroth Wright has often pointed out that clearn of thought depends on a clear terminology.

I am, Sir, yours faithfully,

Paignton, Jan. 28th, 1928. E. WARD

Obituary.

ROBERT ARTHUR MILLIGAN, O.B.E., M.D. DURH., J.P.

By the death of Dr. R. A. Milligan on Jan. 25th orthampton loses one of its outstanding citizens d a medical man who was justly held in great teem in the town and county. Born at Dean, near mbolton, he came of a Scottish family, and was ucated at Clevedon College, Northampton. When ly 17 years of age he attached himself to the actice of Northampton Hospital, proceeding later Guy's where he showed himself an all-round hlete. He qualified as M.R.C.S. in 1881, and after ting as house surgeon and resident obstetrician at uy's, and anæsthetist at the Evelina Hospital, he urned to Northampton and was appointed surgeon the General Hospital there. In the 40 years ring which he held this post he acquired an mense experience, and established a reputation ich led practitioners over a wide area to ask his lp in difficult surgical and obstetrical cases. In dition to surgical practice, Dr. Milligan was senior dical officer to the venereal clinic for Northampton, d he was one of the pioneers in the ambulance vement in the neighbourhood. At the outbreak the war he gave up his private work to take a ajor's commission in the Royal Army Medical rps and gave able service in the First Eastern neral Hospital at Cambridge. In recognition of is work he was made an Officer of the Order of the itish Empire. Dr. Milligan became a magistrate 1908 and served as alderman on the town council 23 years, presiding over the public health comttee; his professional duties made it impossible him to accept the office of mayor, which was veral times offered to him. He was also keenly erested in Rugby football, and seldom missed ending a match on the local ground, where his ofessional services were often called upon.

A colleague and former house surgeon, to whom we e indebted for some of these biographical details, vites of him as follows: "Dr. Milligan was a man imposing physique, whose bluff and cheery manner de him popular with all classes. Of wide perience and sound judgment, he made up his nd quickly and was seldom wrong in diagnosis prognosis. As an operator, if not brilliant, he s essentially sound, and he obtained results surssed by few. Although not carried away by passing shs, he was quick to adopt new methods. A man of w words in professional matters, he inspired great nfidence in his patients. He loved his hospital rk, and although his large figure and loud voice ded to alarm a new probationer, the nursing staff re devoted to him. The amount of work that he d for nothing will never be known, but it was a mmon complaint, even among the comparatively ll-to-do patients, that they could not get a bill t of him. None knew better than he the end he ght expect and he faced it courageously."

Dr. Milligan leaves a widow and four daughters; fifth daughter died three years ago.

CLAUDE WILLIAM SCOTT SABERTON, M.D. MANCH., D.M.R.E.

WE have to record the death at Bournemouth on Jan. 16th of Dr. C. W. S. Saberton. Elder son of the late Dr. F. W. Saberton, of Manchester, he was educated at Owens College, and graduated as M.B. in the Victoria University in 1901. After a period as demonstrator of anatomy at Owens College, he practised for a short time as his father's partner, but early in his career he became interested in radiology and moved to Bournemouth where he was appointed hon. radiologist to the Royal Victoria and West Hants Hospital. Never robust, the strain of war-time work was responsible for his early exemption from military service, and in 1916 he went to Harrogate where he was appointed hon. radiologist to the Infirmary and to the Royal Bath Hospital. It was characteristic of him to undertake this work at a time when his physical condition would have justified him in avoiding any additional strain, and he put his fullest energy and enthusiasm into his hospital as well as his private practice. He took the D.M.R.E. at Cambridge in 1921, and during his seven years in Harrogate established a reputation as a leading radiologist. A pioneer in the application of diathermy he was also one of the first to introduce the deep X ray treatment into England, having made a journey to Erlangen to study the technique. His interests were various, and he was well known at St. Moritz as a skilful curler. Ill-health, however, forced his retirement a few years ago and he went back to live at Bournemouth. "Saberton," writes a colleague, "will be remembered by all who had the privilege of knowing him as one of the kindest and most generous of men. He made a very gallant fight against the ailment which caused his early retirement from practice in 1923, and which ultimately caused his untimely death."

He leaves a widow and one daughter.

JAMES CLEMENT BAXTER, L.R.C.P. IREL., J.P.

THE death occurred on Jan. 27th at his home in Everton, Liverpool, of Dr. J. C. Baxter, at the age of 71. A native of Liverpool, he was educated at St. Xavier's College, studied at the Liverpool School of Medicine, and qualified as L.R.C.P. in 1878. His practice in the district was considerable, and outside medical circles he was well known for his interest in Association football, serving for 38 years as a director of the Everton Football Club. He also acted as medical adviser to the club until a few years ago when he was succeeded in this office by his son, Dr. C. S. Baxter. He was appointed a magistrate for the city of Liverpool in 1906, and from that year until 1920 was a member of the city council. Dr. Baxter leaves a widow and two sons, both of whom are members of the medical profession.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Lts. W. R. S. Panckridge to *Alecto* and S. G. Weldon to *Veronica*.

Surg. Lt. G. S. Rutherford to rank of Surg. Lt.-Comdr.

ROYAL NAVAL VOLUNTEER RESERVE.

Proby. Surg. Sub-Lts. D. C. Livingston and D. R. Goodfellow to be Surg. Sub-Lts.

ROYAL ARMY MEDICAL CORPS.

Lt.-Col. H. F. Shea, having attained the age fixed for compulsory retirement, retires on ret. pay.

Maj. H. St. M. Carter to be Lt.-Col.

Maj. B. H. H. Neven-Spence is re-empld. under Art. 507 (*b*), Royal Warrant for Pay and Promotion.

The undermentioned Capts. to be Majs. (Prov.): W. Millerick and R. Johnson.

Temp. Capt. J. W. Darling relinquishes his commn. and retains the rank of Capt.

W. G. Rees to be Temp. Lt.

Lt. on prob. P. G. Bentlif resigns his commn.

ARMY DENTAL CORPS.

Lt.-Gen. Sir T. H. J. C. Goodwin, K.C.B., C.M.G., D.S.O., ret. pay (Res. of Off.), late R.A.M.C., to be Col. Comdt.

Capt. G. F. Charles to be Maj.

ARMY RESERVE OF OFFICERS.

Col. A. W. N. Bowen and Lt.-Col. G. H. Goddard, having attained the age limit of liability to recall, cease to belong to the Res. of Off.

TERRITORIAL ARMY.

Maj. W. W. MacNaught, Res. of Off., to be Capt.

Lt. T. D. Overend to be Capt.

R. N. Kinnison to be Lt.

TERRITORIAL ARMY RESERVE OF OFFICERS.

Maj. D. E. Finlay, having attained the age limit, relinquishes his commn. and retains his rank.

Hygiene Companies.—Lt. R. E. J. Currell, from the Active List, to be Lt.

INDIAN MEDICAL SERVICE.

To be Temp. Lts.: Prag Nath Kapur, Diwan Chand Chopra, Jaswant Singh, and Prabhakar Narayan Gokhale.
Lt.-Cols. J. C. H. Leicester and H. M. Inman retire.

ROYAL AIR FORCE.

Temp. Capt. R. G. J. Charlesworth (Dental Surgeon, General List, Army) is granted a temporary commission as Flight Lt. on attachment to the Royal Air Force.
Flying Officer C. J. S. O'Malley is promoted to the rank of Flight Lt.

Brevet Col. W. R. P. Goodwin, D.S.O., R.A.M.C., has been appointed Honorary Physician to the King in succession to Maj.-Gen. S. F. St. D. Green, C.B., C.B.E., late R.A.M.C., who has retired; and Col. R. W. Knox, D.S.O., I.M.S., and Col. C. Hudson, C.B., C.I.E., D.S.O., I.M.S., have been appointed Honorary Surgeons to His Majesty.

Medical News.

UNIVERSITY OF OXFORD.—Dr. F. A. Dixey, F.R.S., late Subwarden and Bursar of Wadham, has been elected to an Emeritus Fellowship at that College.

UNIVERSITY OF CAMBRIDGE.—At recent congregations the following degrees were conferred:—

M.D.—A. A. Gemmell and E. H. V. Hodge.
M.B. and B.Chir.—E. S. Bolton, W. F. Cooper, and C. P. Pinckney.
M.B.—W. G. S. Hopkirk.
B.Chir.—J. W. D. Buttery and D. F. Lawson.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.—An ordinary quarterly Comitia of the College was held on Jan. 26th, with Sir John Rose Bradford, the President, in the chair. The following candidates, having satisfied the Censor's Board, were elected Members of the College:—

Roland George Anderson, Godfrey William Bamber, Donald Campbell, Clement Clapton Chesterman, Ronald Cove-Smith, William Hofmeyr Craib, Sheldon Francis Dudley, William Norwood East, Abd el Kader Hilmi El-Shurbagi, William Evans, John Rex Godsall, Cecil William Hutt, Una Christina Ledingham, Noel Vernon McKenna, Basil William Sholto Mackenzie, Richard Glyn Maliphant, Phillip Justin Markell, Albert Victor Neale, Alexander Adam McIntosh Nicol, Charles Bruce Perry, Ronald Arthur Phillips, John Douglas Procter, Reginald Hans Taylor Rea, Abd el-Azim Yousif Mostafa Salama, Sydney Watson Smith, Howard Hilton Stewart, Charles Cady Ungley, Marion Boyd Wanliss, and Lawrence Stuart Woolf.

Licences to practise were conferred upon 120 candidates (92 men and 28 women) who have passed the Final Examination in Medicine, Surgery, and Midwifery of the Conjoint Board, and have complied with the by-laws of the College. The following are the names and medical schools of the successful candidates:—

R. Anderson, Cambridge and Birmingham; G. D. Augenlicht, Rostov and Westminster; L. Bernard, London; F. G. Booker, Cambridge and Guy's; G. N. Box, St. Thomas's; M. S. R. Broadbent, Cambridge and St. Bart.'s; J. W. Bromley, Cambridge and London; C. E. S. Bullen, Leeds; Eleanor M. Carless, Royal Free; A. M. Chaudhuri, Calcutta and St. Bart.'s; S. S. Chesser, Cambridge and St. Thomas's; T. L. Cleave, Bristol; G. A. Coggin, London; C. N. Cohen, Guy's; C. C. Cookson, Birmingham; N. Cox, Manchester; Pera R. C. Crawford, Royal Free; W. S. Creer, Liverpool; D. S. Davies, Oxford and Guy's; E. R. L. Davies, Cardiff; Helena M. de Hartog, Royal Free and St. Mary's; M. M. Dey, Leeds; Olivia F. Digby-Smith, Cardiff; H. Doyle, Calcutta and St. Mary's; M. R. Doyle and C. B. Drew, St. Thomas's; J. St. C. Elkington, Cambridge and St. Thomas's; Alexandra G. H. English, Royal Free; A. G. Ensor and H. Epstein, Guy's; M. M. Fikri, Cairo; John Foster, Cambridge and London; H. D. F. Fraser, St. Bart.'s; Mabel O. Cassels Freeston, Royal Free; T. R. Gaha, Sydney and St. Mary's; P. J. Ganner, Birmingham; Caterina P. Giles, Cambridge and King's Coll.; E. M. Goitein, University Coll.; R. A. P. Gray, Cambridge and St. Bart.'s; C. R. Green, Oxford and Westminster; C. S. Gross, Guy's; Bridget S. P. Gurney, Royal Free; B. Haring, Manchester; R. M. J. Harper, Oxford and St. Thomas's; J. Harris, Adelaide and London; R. L. Harward, Guy's; N. F. Haslam, Birmingham; J. C. Hatrick, University Coll.; L. Hennell, Manitoba and Middlesex; Margaret A. L. Herbertson, Oxford and King's Coll.; Anna M. Hilliard, Toronto; E. A. H. Hindhaugh London; N. M. Hodivala, Bombay and London; Josephine M. Howells, Westminster; W. H. Hubert, Cambridge and St. George's; W. L. Hurn, St. Bart.'s; A. L. Hyatt, Middlesex; Dorothy M. James, Cardiff; D. C. R. R. Jenkins, St. Bart.'s; I. J. Jones, St. Thomas's; R. T. Jones, Cardiff and Guy's; H. Kaitz, Guy's; Alison R. Kerridge, Royal Free; A. K. M. Khan, Bombay and Middlesex; P. Kuhne, Lausanne and Charing Cross; T. E. Lamech, Cambridge and St. Thomas's; B. A. Lamprell, King's Coll.; W. J. Lloyd, Cambridge and St. Bart.'s; Margaret I. Meacock, Cardiff and Westminster; A. A. Miles, Cambridge and St. Bart.'s; Mary M. Moore, Royal Free; C. F. Moore, St. Bart.'s; C. S. Morton, St. Thomas's; W. H. Myburgh, Cape and Guy's; J. O'Donoghue, London; Lois J. Ogle, Royal Free; E. N. O'Neill, St. Mary's; Ella M. Oswald, Royal Free; T. N. Parish, King's Coll.; W. E. C. Parry, Cambridge and University Coll.; P. I. Peltz, St. Bart.'s; P. P. Pess, Ceylon and King's Coll.; C. D. Politeyan, Cambridge and St. Thomas's; A. E. Porritt and Monica M. M. Power, St. Mary's; J. C. Preston, Manchester; Agnes M. Ramsbotham, Royal Free; W. G. Richards, St. Thomas's; J. H. Richmond, Cambridge and Guy's; T. McK. Robb, Guy's; F. E. Roberts, Birmingham; Elizabeth J. Robin, King's Coll.; Florence E. Robinson, Royal Free; F. S. Rudland, Birmingham; Margaret M. Russell, King's Coll.; R. W. Sabonadiere, St. Thomas's; W. J. M. Sa[illegible], University Coll.; H. A. Seidenberg, St. Bart.'s; Dori[illegible] Sharvelle, King's Coll.; D. C. Shields, St. Georg[illegible] Clarice A. Skidmore, St. Mary's; T. E. Skinner and W. D. Steel, Birmingham; G. Steinberg, Bristol; W. P. R. Swemmer, Guy's; B. A. Taylor, Manchester; Dor[illegible] Tims, Charing Cross; Ruth M. W. Turner, Cambridge and St. Mary's; D. R. Tweedie, Cambridge and St. Bar[illegible] G. P. A. van Rossum, Cape and St. Bart.'s; J. A. Ver[illegible] Guy's; Elizabeth H. Waller, Charing Cross; H. S. Wa[illegible] Cambridge and St. Mary's; K. H. Watkins, Manches[illegible] I. Waynik, Cape and Charing Cross; C. H. C. W[illegible] Guy's; H. O. White, St. Bart.'s; Hannah E. W[illegible] Royal Free; E. A. Wood, University Coll.; and N. R. Wynn Williams, Middlesex.

A supplemental list of licentiates will be issued later of the candidates whose examination is still in progress.

The undermentioned diplomas were also conferred conjointly with the Royal College of Surgeons, to following candidates:—

Diploma in Psychological Medicine.—W. A. Caldwell, I. Cook, I. Frost, N. G. Harris, E. J. C. Hewitt, R. G. Marsh, N. R. Phillips, R. P. Rees, and H. H. Steadman.
Diploma in Laryngology and Otology.—H. Bahgat, R. E. Buckingham, H. S. Chhachhi, H. A. Cowan, S. Da[illegible] E. M. Dearn, H. G. Downer, R. A. Highmoor, Barbar[illegible] Logan, P. MacMurray, J. H. O'Donnell, A. M. Ross, [illegible] Sen, J. J. Stander, P. Subbaramayya, and H. L. Vaid.
Diploma in Public Health.—F. Asker, A. D. Belilios, [illegible] Benjamin, W. A. Brown, Isabella M. G. Butler, Dor[illegible] M. Catchpool, N. E. Chadwick, Nancy M. Coutts, A. V. Crawford, R. N. Curnow, Gweneth M. Daniel, Hild[illegible] Dean, E. L. F. De Mel, Kathleen Dickinson, Christ[illegible] S. Eyre, Nancy K. Gibbs, Gladys Goument, W. H. Hamilton, R. S. Johnson, M. H. Khan, F. E. R. Labo[illegible] Eroica R. Lewis, K. L. Malhautra, H. L. Malhotra, [illegible] W. Morris, G. Napier, H. A. A. Pargeter, B. L. Pat[illegible] K. P. Pillai, T. A. Seekings, S. R. A. Shah, Kath[illegible] Shelton, C. H. C. Toussaint, S. N. Wasti, P. L. W[illegible] and C. A. Wood.
Diploma in Ophthalmic Medicine and Surgery.—H. K. [illegible] J. C. Bringan, A. E. F. Chaffer, E. J. Collins, S. D[illegible] G. I. Evans, B. F. Eminson, E. R. Jagger, M. S. K[illegible] B. Kay, R. B. Khare, L. R. Lalwani, G. D. Malho[illegible] M. A. Mithavala, D. Patwardhan, W. J. Riddell, Loui[illegible] Rubidge, D. D. S. Stewart, and C. R. Verling-Brown.

Dr. A. E. Russell was elected to the Council in the [illegible] of the late Sir Percy Bassett-Smith.—Communications [illegible] received: (1) from the Secretary of the Royal Colleg[illegible] Surgeons; (2) from the Medical Secretary of the Br[illegible] Medical Association; (3) from the President and Counc[illegible] the Institute of Chemistry of Great Britain and Ireland.—[illegible] Monckton Copeman was appointed to represent the Co[illegible] at the Thirty-ninth Congress of the Royal Sanitary Instit[illegible] —Sir Leonard Rogers was appointed as delegate to [illegible] centenary celebration of the Faculty of Medicine, Cair[illegible] response to the invitation of the Minister of Education of [illegible] Kingdom of Egypt.—Communications were received f[illegible] the President of the University of Toronto and from [illegible] R. D. Rudolph with reference to the recent celebration of [illegible] centenary of King's College, Toronto.—A report [illegible] received from the representative of the College on [illegible] General Medical Council.—Dr. C. O. Hawthorne reported [illegible] the Departmental Committee of the Optical Practitio[illegible] Registration Bill.—Books and other donations to the lib[illegible] presented during the last quarter were received and tha[illegible] were returned to the donors.—The annual report of [illegible] examiners for the Licence on the examination held in [illegible] year 1927 was received.

MEDICAL FACULTY OF INNSBRUCK.—Prof. Georg[illegible] Gruber, Dean of the Faculty, announces the holding [illegible] post-graduate course for practitioners at Innsbruck f[illegible] March 12th to 18th. Each morning is occupied f[illegible] 8 to 1 with a series of five systematic lectures or demons[illegible] tions in medicine, surgery, or special subjects, and a[illegible] from 3 to 5 in the afternoons except Wednesday. Instruc[illegible] is given in each case by the professor in the Faculty. T[illegible] is an entrance fee of 20 schillings (about 14*s.*), and all [illegible] wish to take part should register before March 10th [illegible] the Dean of the Medical Faculty, Innsbruck.

SOCIETY OF APOTHECARIES OF LONDON.—At recent minations the following candidates were successful:—
urgery.—G. N. Fox, St. Bart.'s Hosp.; A. W. Lassowsky, Basle and Middlesex Hosp.; and J. R. Mitchell, Liverpool.
Iedicine.—G. N. Fox, St. Bart.'s Hosp., and D. I. Jones, Univ. Coll. and St. George's Hosp.
'orensic Medicine.—G. N. Beeston, Charing Cross Hosp.; B. P. Jones, Manchester; D. I. Jones, Univ. Coll. and St. George's Hosps.; A. W. Lassowsky, Basle and Middlesex Hosp.; and J. R. Mitchell, Liverpool.
Iidwifery.—W. B. Hallums and H. T. Ince, St. Mary's Hosp.; E. A. Johnstone, Manchester; and H. D. K. Wright, St. Bart.'s Hosp.
he Diploma of the Society entitling candidates to practise licine, surgery, and midwifery was granted to D. I. Jones A. W. Lassowsky.

UNIVERSITY OF LONDON.—At a meeting of the ate held on Jan. 25th Mr. M. E. Delafield, M.B. Camb., P.H., was appointed as from a date to be determined sequently to the University Chair of Chemistry as applied Hygiene, tenable at the London School of Hygiene and pical Medicine. Dr. Delafield was educated at Merchant lors' School, Jesus College, Cambridge, and St. Thomas's spital. He took a first class in the Natural Science Tripos 1907, and graduated as M.B. in 1910. From that year il 1916 he was engaged in medical practice, and from 5–16 was a temporary medical school inspector for the don County Council. He saw military service from 1916 919, being awarded the Military Cross, and for the next years was deputy medical officer of health for Stoke vington and head of the Sanitary Science Department of L.C.C. Hackney Institute. From 1920–24 he was also stant in the Department of Public Health and Hygiene University College, and since 1925 he has been head of department.
r. E. L. Kennaway was awarded the William Julius kle Fellowship for 1928 in respect of the work he has ied out on cancer research during the past five years. Fellowship this year is of the value of about £275.
Ir. H. L. Eason was appointed to represent the University the General Medical Council.
r. W. J. O'Donovan, physician to the skin department he London Hospital, has been admitted to membership he Faculty of Medicine.
uy's Hospital Medical School.—Lectures on the Surgery he Kidney and Ureter will be given at this school by Mr. ham Simpson on Fridays, Feb. 10th, 17th, and 24th, 5.30 P.M. Admission free without ticket.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE DICAL ASSOCIATION.—On Monday, Feb. 6th, at 5 P.M., the Medical Society of London, 11, Chandos-street, endish-square, W. 1, Dr. R. M. Stewart will lecture Secondary Forms of Mental Deficiency. On the same , at 2.30 P.M., at St. Mark's Hospital, Mr. J. P. Lockhart-mmery will give a clinical demonstration. On Friday, . 10th, from 2 to 3 P.M., at the Paddington Green ldren's Hospital, Dr. G. A. Sutherland will give a clinical monstration, and on the same day, at 5 P.M., at the Royal stminster Ophthalmic Hospital, Mr. C. L. Gimblett will a clinical demonstration on Cataract. The lecture and demonstrations are open to members of the medical fession without fee. From Feb. 6th to Feb. 18th a cial course in Diseases of Children will be given at the ldington Green Children's Hospital and at the Victoria spital for Children; sessions will be held alternately at h hospital, and will include lectures, demonstrations, operations. From Feb. 20th, for four weeks, a course in ereal Diseases will be given at the London Lock Hospital ing the afternoons and some evenings, consisting of ical instruction and lectures. The course has been poned from Feb. 6th. As the lectures will only be given here is an entry of six, early application should be made. m Feb. 20th to March 3rd, at the Queen Mary's Hospital, tford, an all-day course will be held in medicine, surgery, the specialties, at which lectures and demonstrations be given and operations performed. Information, abuses of special and general courses, tickets, and copies he *Post-Graduate Medical Journal* may be had from the retary of the Fellowship at 1, Wimpole-street, London, W.

THE fifth International Medical Congress for ustrial Accidents and Occupational Diseases is to be held in lapest from Sept. 2nd to 8th. Addresses will be given, ongst others, by Prof. J. Liniger, Dr. F. Zollinger, Prof. B. Lehmann, Sir Thomas Oliver, Prof. J. G. Sleeswijk, Prof. ten, Prof. Koelsch, Prof. Julius van der Hoeve, and Prof. phan Jellinek. Although industrial diseases will receive sideration, particular prominence will be given in the gramme to industrial accidents, as in 1929 a congress cially devoted to diseases is to be held in Lyons under auspices of the Congress for Occupational Diseases. Council of Industrial Medicine has been nominated to as the British National Committee, and further informa- can be had from the Secretary, 12, Stratford-place, don, W. 1.

NAVAL MEDICAL COMPASSIONATE FUND.—At the quarterly meeting of the directors, held on Jan. 24th, the sum of £115 was distributed among the several applicants.

WEST KENT MEDICO-CHIRURGICAL SOCIETY.—A meeting will be held at the Miller General Hospital, Greenwich, on Friday, Feb. 10th, at 8.45 P.M., when Dr. M. Travers Smith will give an address on the Origin and Diagnosis of Cardiac Murmurs.

HOSPITAL DEVELOPMENTS AT LEAMINGTON.—An orthopædic clinic for children under 14 is to be established at the Warneford Hospital, Leamington. The hospital is also about to undertake the training of pupil midwives, which has hitherto been conducted by the Warwickshire Nursing Association with the aid of a grant from the county.

PROPOSED IRISH PHARMACY BILL.—It is understood that the Government of the Irish Free State has been in consultation with representatives of the Pharmaceutical Society of Ireland for the purpose of framing a Bill to govern the practice of pharmacy. The heads of a Bill have been agreed on, and it is probable that legislation will shortly be undertaken.

HOSPITAL NEEDS IN SALFORD.—The Salford Guardians contemplate the provision of considerable additional hospital accommodation at the Union Infirmary. It is proposed to allocate 100 beds to the Corporation and 50 to the Royal Hospital, while the Union Infirmary itself needs 250 additional beds, making a total of 400. Since, however, it is thought desirable to provide a margin of accommodation, it is intended to provide 500 beds in all.

DENTAL PRACTICE IN VICTORIA (AUSTRALIA).—The Acting Agent-General for Victoria informs us of the receipt of a cablegram from his Government intimating that under an Act recently passed in the State the registration of British dentists is restricted solely to licentiates of British medical authorities and that the restrictions apply to all dentists who had not embarked for Victoria prior to Dec. 8th last. Most of the Dominions have, we understand, already made a similar restriction.

A COTTAGE HOSPITAL'S TREASURE.—A few years ago there was left to the Cottage Hospital at Moreton-in-the-Marsh in Gloucestershire a chair reputed to be that in which Charles I. sat during his trial in Westminster Hall. It is stated that the authorities of the Victoria and Albert Museum see no reason to doubt its authenticity, and negotiations for its purchase are far advanced. The chair will be placed in the furniture section of the museum.

BIRMINGHAM DENTAL HOSPITAL.—The annual report of this institution states that nearly 37,000 operations were performed during the past year, an increase of 1000. An extended use was made of local anæsthesia, and the demonstration room is to be equipped with up-to-date electrical appliances, including a compressed air installation which will serve both the conservancy and prosthetic departments. The number of radiographic examinations doubled during the year.

DENBIGHSHIRE HOSPITALS.—A shilling fund in aid of the endowment of the Breconshire War Memorial Hospital has been set on foot. It is intended as a memorial of the late Lord Glanusk, who died in the act of opening the hospital. The committee of visitors of the North Wales Mental Hospital at Denbigh propose to spend £80,000 upon the extension of the buildings. The hospital contains 98 patients over and above the proper accommodation, and lunacy is said to be increasing in the five North Wales counties at the rate of 20 cases per annum.

ROYAL NATIONAL ORTHOPÆDIC HOSPITAL.—On Jan. 30th the officers and staff of this hospital held a festival dinner at the Mansion House, to celebrate the completion of seven years' work, and to attempt to raise the sum of £40,000, to pay for the 200 beds for which provision has already been made at the country branch at Stanmore. In proposing the toast of "The Hospital," Prince Henry, the President, described the miraculous results which took place not only in the physique of the patients but in their mentality, and urged the economy of curing the nation's cripples rather than supporting them. Dr. Graham Little, M.P., who seconded, extolled the virtues of the voluntary hospital system, described the new country branch, and vigorously championed orthopædic surgery against the pretentious modern craft of osteopathy. Mr. H. E. West, the chairman, made a witty reply, at the end of which he drew the guests' attention to the cheques and fountain-pens which had been placed by their sides. The health of "The Guests" was proposed by Mr. Reginald McKenna, and answered by Sir Philip Gibbs. The guests included the Lord Mayor and Corporation, and the mayors of many of the London boroughs. The President announced that the subscriptions and presents received that evening had reached a total of £10,100.

EXTENSION OF LEEDS MATERNITY HOSPITAL.—Princess Mary last week laid the "panel stone" of the first part of an extension which will add two wings to this institution. The cost will be £60,000, of which a little more than half has been raised.

IMMUNISATION AGAINST DIPHTHERIA.—The Manchester Education Committee at its meeting on Jan. 23rd, after considering a report by its subcommittee and a report by the medical officer of health for the city on diphtheria immunisation, adopted a resolution "to approve of the principle of voluntary preventive inoculation against diphtheria. To coöperate with the Public Health Committee in the practical application of a suitable scheme." Nothing will be done until a scheme has been brought before the committee.

DONATIONS AND BEQUESTS.—Mr. Edward Martin, of Bishopsgate, London, left £1000 each to the London Hospital, Dr. Barnado's Homes, and the Salvation Army, and £250 to the Victoria Hospital, Southend-on-Sea.—Sir Edward Burnet James, of Bristol, left £1000 to the Bristol General Hospital, £500 each to the Bristol Royal Infirmary and the Bristol Benevolent Institution.—Mr. Joseph Frederick Read, of Watermillock, Penrith, formerly of Liverpool, solicitor, left, on the death of his wife, £1000 to the Liverpool Open-air Hospital for Children, £500 each to the Samaritan Hospital for Women, Wallasey Cottage Hospital, Liverpool Bluecoat Hospital, the Royal Seamen's Orphan Institution, and £200 to the Eye and Ear Infirmary, Liverpool, and on like conditions one-half of the residue for charitable or philanthropic institutions within a radius of 10 miles from the town hall of Liverpool, as the executors may think fit.—Mr. Henry Westmacott, Manchester, chemist, who left estate of the gross value of £6368, after certain small bequests left the residue of his property, about £5000, to the Manchester Royal Infirmary.—Mr. Algernon Preston, of Penmaenmawr, late of Sale, left £2000 to the Dental Hospital, Manchester, in memory of his son, Dr. Charles Henry Preston.—Miss Matilda Margaret Reid, of Hampstead, left more than £35,000 to charities, including £10,000 to the National Institution for the Blind and Earl Haig's British Legion Fund, and £5000 to Dr. Barnardo's Homes and two other institutions.

Medical Diary.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

TUESDAY, Feb. 7th.—5.30 P.M., ORTHOPÆDICS. (Cases at 4.30 P.M.) Cases: Mr. Paul Bernard Roth: Madelung's Deformity after Operation, Flattening of the Head of the Metatarsal Bone. Mr. B. Whitchurch Howell: Malunion of the Phalanges of the Right Hand, A New Orthopædic Operation Table. Mr. E. H. R. Altounyan: Case of Congenital Absence of the Upper End of the Femur (communication). Mr. Rocyn Jones: Arthroplasty of the Temporo-maxillary Joint. Mr. H. A. T. Fairbank: Two Cases of Snapping Knees in which the External Semilunar Cartilage Formed Complete Circular Disc. 8.30 P.M., PATHOLOGY. Laboratory Meeting at the Bernhard Baron Institute of Pathology, London Hospital. Demonstrations: H. E. Roaf: Method for Testing Colour Vision. S. P. Bedson: Experimental Herpes in the Guinea-pig. Dorothy Russell: Lesions of the Spore Tetanus. H. D. Kay and R. T. Brain: New Test for Renal Function. H. D. Kay and R. L. Aiken: An Ultra-filtration Method. A. B. Bratten: Pathological Specimens. K. H. Tallerman: Preparation of Collodion Membranes. J. R. Marrack: Osmotic Pressure of Serum Proteins in Nephritis. P. Fildes: Motility of *B. tetani*; Germination of *B. tetani*; Oxidation-reduction Potential Necessary for the Germination of *B. tetani*.

WEDNESDAY.—5.30 P.M., SURGERY: SUBSECTION OF PROCTOLOGY. Short Papers: Mr. F. J. McCann: An Operation for Prolapse of the Rectum in the Female. Mr. Zachary Cope: The Treatment of Irreducible Sigmoido-rectal Intussusception in Old People. Mr. W. B. Gabriel: Five Cases of Small Gut Obstruction Round Colostomies. (Each paper will be followed by discussion.) Demonstration: Dr. P. H. Manson-Bahr: A Demonstration of Sigmoidoscopic Appearances of Dysenteries of Tropical Origin.

THURSDAY.—8.30 P.M., OPHTHALMOLOGY, NEUROLOGY. Special Discussion on Ocular Complications of Encephalitis Lethargica. Speakers: Dr. James Collier (Neurology). Mr. F. A. Williamson-Noble (Ophthalmology). The following will also take part in the discussion: Dr. A. Feiling, Dr. J. R. Perdrau, Mr. M. L. Hine, Mr. R. Foster Moore, Dr. W. J. Adie. Cases (at 8 P.M.): Mr. A. H. Levy: Spasm of the Orbicularis, an Early Symptom in Encephalitis Lethargica.

FRIDAY.—5.30 P.M., CLINICAL. (Cases at 5 P.M.) Cases: Dr. Bernard Myers: Two Cases of Essential Thrombocytopenic Purpura Hæmorrhagica Two Years after Splenectomy. Dr. George Rossdale: An Unusual Type of Pericarditis Associated with Rheumatic Heart Disease. Other cases will be shown.

MEDICAL OFFICERS OF SCHOOLS ASSOCIATION.

FRIDAY, Feb. 10th.—5 P.M., at 11, Chandos-stre Cavendish-square, W. Dr. A. A. Mumford: Sch Medical Officer of the Future. (Tea 4.30 P.M.)

BIOCHEMICAL SOCIETY.

MONDAY, Feb. 6th.—5 P.M., at the Lister Institute, Chel Bridge-road, S.W. Communications: H. Jephcott A. L. Bacharach: The Quantitative Estimation Vitamin D. A. L. Bacharach and E. Allchorne: Vitamin B Content of Malt Extract. M. G. Wl and J. J. Willaman: The Alcoholic Fermentation Pentoses by Fusarium Lini. A. V. Hill: Increa Anaerobic Metabolism in Muscle following Stimulati D. Jordan Lloyd and W. B. Pleass: The Effect Nitrates on the Absorption of Water by Gela H. W. Kinnersley, R. A. Peters, and V. Read Metabolic Constancy in the Pigeon. R. T. Br and H. D. Kay: Phosphate Excretion. R. P. C and B. Woolf: The Deamination and Synthesis l-aspartic Acid by Bacteria. R. Robinson and K. Soames: Calcification in Vitro.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUA

MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, Feb. 6th, to SATURDAY, Feb. 11th.—FELLOWS OF MEDICINE LECTURE at the Medical Society London, 11, Chandos-st., Cavendish-sq. Mon., R. M. Stewart: Secondary Forms of Mental Deficie at 5 P.M.—PADDINGTON GREEN CHILDREN'S HOSPI W. Clinical demonstration at 2 to 3 P.M., by Dr. G Sutherland, on Fri.—ST. MARK'S HOSPITAL, City-rc E.C. Clinical demonstration by Mr. J. P. Lockh Mummery, on Mon., at 2.30 P.M.—ROYAL WE MINSTER OPHTHALMIC HOSPITAL, Charing Cross, W Fri., at 5 P.M., Clinical demonstration, Mr. C. Gimblett: Cataract. The above lecture and demons tions are open to members of the medical profess without fee.—PADDINGTON GREEN CHILDREN'S H PITAL AND VICTORIA HOSPITAL FOR CHILDREN. C bined course in Diseases of Children. Mornings afternoons. Lectures, demonstrations, and operati —ST. JOHN'S HOSPITAL FOR DISEASES OF THE SI Leicester-square. Course in Dermatology, every af noon. Pathology course arranged.—BETHLEM RO Hospital, St. George's Fields, S.E. Tues. and mornings. Clinical demonstration in Psycholog Medicine.—THE NATIONAL HOSPITAL, Queen-squ W.C. Course in Neurology. Every afternc Demonstrations. Lectures at certain times.

WEST LONDON POST-GRADUATE COLLEGE, W London Hospital, W.

MONDAY, Feb. 6th.—10 A.M., Dr. Dowling: Skin Dep ment. 11 A.M., Mr. Tyrrell Gray: Surgical Wa 2 P.M., Dr. Trevor Davies: Gynæcological Departm

TUESDAY.—2 P.M., Dr. Shaw: Medical Out-patie 2 P.M., Mr. Sinclair: Surgical Out-patients. 2 P Mr. Hamblen Thomas: Throat, Nose and Ear Dep ment.

WEDNESDAY.—10 A.M., Dr. Burnford: Medical Wa 2 P.M., Mr. Tyrrell Gray: Operations. 2.30 P Mr. Donald Armour: Surgical Wards.

THURSDAY.—10 A.M., Dr. Grainger Stewart: Neurolog Department. 2 P.M., Mr. MacDonald: Gen urinary Department. 2 P.M., Mr. Bishop Harm Eye Department.

FRIDAY.—10 A.M., Dr. Pritchard: Special Medical Tr ment Clinic. 2 P.M., Mr. Vlasto: Throat, Nose Ear Department. 2 P.M., Dr. Shaw: Medical C patients.

SATURDAY.—10 A.M., Dr. Burnford: Bacterial Thera 10 A.M., Dr. Owen: Medical Diseases of Children. Medical and Surgical Out-patients, Operations, Spe Departments, daily, 10 A.M. to 5 P.M., Saturd 10 A.M. to 1 P.M.

NORTH-EAST LONDON POST-GRADUATE COLLE Prince of Wales's General Hospital, Tottenham.

MONDAY, Feb. 6th.—2.30 to 5 P.M., Medical, Surgical, Gynæcological Clinics. Operations.

TUESDAY.—2.30 to 5 P.M., Medical, Surgical, Thr Nose and Ear Clinics. Operations.

WEDNESDAY.—2.30 to 5 P.M., Medical, Skin, and Clinics. Operations.

THURSDAY.—11.30 A.M., Dental Clinics. 2.30 to 5 P Medical, Surgical, and Ear, Nose and Throat Clir Operations.

FRIDAY.—10.30 A.M., Throat, Nose and Ear Clir 2.30 to 5 P.M., Surgical, Medical, and Childr Diseases Clinics. Operations.

On TUESDAY, Feb. 7th, and THURSDAY, Feb. 9th, at 2 P there will also be Special Demonstrations of Ear, N and Throat Cases and Medical Cases by Mr. Ibbotson and Dr. A. J. Whiting respectively.

NATIONAL HOSPITAL, Queen-square, Bloomsbury.

MONDAY, Feb. 6th.—2 P.M., Dr. Hinds Howell: patient Clinic. 3.30 P.M., Mr. Paton: Papilloedema

TUESDAY.—2 P.M., Dr. Walshe: Out-patient Cli 3.30 P.M., Dr. Grainger Stewart: Principles Un lying the Diagnosis of Spinal Tumours (2).

THURSDAY.—2 P.M., Dr. Kinnier Wilson: Out-pat Clinic. 3.30 P.M., Dr. Walshe: Neurosyphilis

FRIDAY.—2 P.M., Dr. Adie: Out-patient Clinic. 3.30 P Mr. Elmquist: Demonstration of Re-educa Methods.

HOSPITAL FOR SICK CHILDREN, Great Ormond-str W.C.

THURSDAY, Feb. 9th.—4 P.M., Mr. O. L. Addison: Cy scopy.

YAL NORTHERN HOSPITAL, Holloway-road, N.
TUESDAY, Feb. 7th.—3.15 P.M., Dr. A. Whitfield: Lichen Planus, Varieties and Treatment.
NTRAL LONDON THROAT, NOSE AND EAR HOSPITAL, ray's Inn-road, W.C.
WEDNESDAY, Feb. 8th.—4 P.M., Consultations and Demonstrations.
FRIDAY.—4 P.M., Dr. Dan MacKenzie: Early Mastoid Operations.
PAUL'S HOSPITAL, Endell-street, W.C.
WEDNESDAY, Feb. 8th.—4.30 P.M., Mr. R. H. Jocelyn-Swan: Enlarged Prostate.
YAL INSTITUTE OF PUBLIC HEALTH, 37, Russell-quare, W.C.
WEDNESDAY, Feb. 8th.—4.30 P.M., Dr. W. N. East: Some Problems of Forensic Psychiatry.
NDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 9, Leicester-square, W.C.
TUESDAY, Feb. 7th.—5 P.M., Dr. Graham Little: Lichen Planus.
THURSDAY.—5 P.M., Dr. J. E. M. Wigley: Lupus Erythematosus.
LGRAVE HOSPITAL FOR CHILDREN, Clapham-road, .W.
WEDNESDAY, Feb. 8th.—4.30 P.M., Dr. Norman H. Hill: Clinical Meeting.
OPLE'S LEAGUE OF HEALTH.
WEDNESDAY, Feb. 8th.—6 P.M. (at the Medical Society's Rooms, 11, Chandos-street, Cavendish-square, W.), Dr. R. D. Gillespie: Habit and Adaptation.
MARY'S HOSPITALS, MANCHESTER (Post-Graduate ecture).
FRIDAY, Feb. 10th.—4.30 P.M. (at the Whitworth-street West Branch), Dr. Bride: Obstetric Operations.
IVERSITY OF SHEFFIELD POST-GRADUATE CLINICS.
FRIDAY, Feb. 10th.—3.30 P.M., Dr. Yates: Clinical Cases.

Appointments.

FCHER, W. H., M.D. Oxf., D.P.H., has been appointed Medical Officer of Health, Godstone R.D.C.
RKE, EILEEN M., M.B., B.S. Lond., Medical Officer to the Nottingham Board of Guardians.
DISON, H. W., M.B., B.Chir. Camb., Medical Superintendent of Wonford House Mental Hospital, Exeter.
GG, R. A., M.D. Edin., D.P.H., County Medical Officer of Health for East Sussex.
ES, A. M., M.D., F.R.C.S. Edin., Honorary Surgeon to the Ear, Nose and Throat Department of Cardiff Royal Infirmary.
LEAN, J. ALLAN, M.B., Ch.B. Glasg., Assistant Surgeon, Dewsbury and District General Infirmary.
NSON, M., M.D., Ch.B. Glasg., D.P.H., Medical Officer of Health and School Medical Officer, Wood Green U.D.C.
SHALL, C. M., M.B., Ch.B. New Zealand, Resident Medical Officer to the Freemasons' Hospital and Nursing Home, Fulham-road, S.W.

Vacancies.

For further information refer to the advertisement columns.

Saints' Hospital for Genito-Urinary Diseases, 91, Finchley-road, N.W.—Hon. Consulting Phys. and Hon. Surg. Reg.
ford County Hospital.—Asst. H.S. At rate of £130.
ngbroke Hospital, Wandsworth Common S.W.—H.S. At rate of £120.
hton, Royal Sussex County Hospital.—H.S. £150.
tol General Hospital.—H.P., H.S., and Res. Obstet. O., &c. Each at rate of £80.
iff Royal Infirmary.—Hon. Asst. Surg. to Ear, Nose, and Throat Department.
isle, Cumberland Infirmary.—R.M.O. At rate of £155. Also Jun. H.S. At rate of £135.
of London Hospital for Diseases of Heart and Lungs, Victoria Park, E.—H.P. At rate of £100.
of London Maternity Hospital, City-road, E.C.—Asst. Res. M.O. At rate of £80.
don, Children's Medical Home, Waddon.—Visiting M.O. (V.D.). £150.
don County Borough.—Deputy M.O.H., &c. £780.
nshire County Council.—M.O. £600.
African Medical Service.—Sanitation Officer. £600.
Suffolk and Ipswich Hospital.—Cas. O. (Male). £150.
burgh Royal Infirmary, Ophth. Dept.—Sen. Clin. Asst. £145.
er, Royal Devon and Exeter Hospital.—Res. Cas. O. At rate of £100.
ge Town Municipality, Penang, Straits Settlements.—Deputy Municipal Health O. $7200.
t Yarmouth General Hospital.—H.S. £150.
dford Union Institution, Warren-road.—Res. Asst. M.O.
tford County Hospital.—Hon. Asst. S.
g-Kong Government.—Radiologist Electrologist. £740.
pital for Tropical Diseases, Endsleigh-gardens, W.C.—Hon. Asst. P.
vich, Heathfield Infirmary, &c.—Asst. Res. M.O. £250.
ester Royal Infirmary.—Hon. P. and Asst. Hon. P. Asst. Pathologist. £500.
isham, Metropolitan Borough of.—Asst. M.O.H., &c. £650.
Liverpool, Hospital for Consumption and Diseases of Chest.—Asst. M.O., &c. £150.
London School of Hygiene and Tropical Medicine, 23, Endsleigh-gardens, W.C.—University Chair of Biochemistry. £1300. Also Research Studentship in Protozoology. £250.
Manchester and Salford Hospital for Skin Diseases.—H.S. £100.
Middlesbrough County Borough.—Asst. to M.O.H. £450.
Ministry of Health, Whitehall, S.W.—M.O. £600.
Omdurman, C.M.S. Hospital.—Doctor required.
Preston County Borough.—Asst. S.M.O. £600.
Queen's Hospital for Children, Hackney-road, E.—Res. M.O. £200. Also Cas. O. At rate of £100.
Rochester, St. Bartholomew's Hospital.—H.P. At rate of £175.
Royal Free Hospital School of Medicine for Women.—University Chair of Pathology. £1000.
Royal Free Hospital and London School of Medicine for Women, Obstet. and Gynæcol. Unit.—Anæsthetist. £100.
Royal National Orthopædic Hospital, 234, Great Portland-street, W.—H.S. At rate of £150.
Royal National Orthopædic Hospital (Country Branch), Stanmore, Middlesex.—H.S. At rate of £150.
Royal Naval Dental Service.—Five Dental Surgeons.
Royal Northern Hospital, Holloway, N.—Ophth. Surg.
St. John's Hospital, Lewisham, S.E.—Asst. P.
St. Thomas's Hospital.—Phys. in charge of Out-patients.
Sleaford, Kesteven Mental Hospital.—Asst. M.O. £350.
Smethwick County Borough.—Asst. M.O.H., &c. £600.
Stoke-on-Trent, City of.—M.O. of Venereal Diseases Centre. £850.
Truro, Royal Cornwall Infirmary.—H.S. £170.
University College Hospital Medical School.—Radcliffe Crocker Travelling Scholarship in Dermatology. £280.
Warwick County Mental Hospital, Halton.—Asst. M.O. £300.
West London Hospital, Hammersmith-road, W.—Hon. Obstet. Reg.
West Riding County Council.—School Oculist. £600.
Wolverhampton and Midland Counties Eye Infirmary.—H.S. £200.

The Secretary of State for the Home Department gives notice of a vacancy for a Medical Referee under the Workmen's Compensation Act for the Lochaber District (Sheriffdom of Inverness, Elgin, and Nairn). Applications should reach the Private Secretary, Scottish Office, Whitehall, London, S.W., not later than Feb. 15th.

Births, Marriages, and Deaths.

BIRTHS.

BREWERTON.—On Jan. 24th, at Harley-street, W., the wife of Elmore Wright Brewerton, F.R.C.S., of a son.
YEOMAN.—On Jan. 25th, at White Croft, Fetcham Park, Leatherhead, the wife of J. Clark Yeoman, L.D.S., of a son.

MARRIAGES.

CAMPBELL—STANSFIELD.—On Jan. 25th, at the Parish Church, East Hoathly, by the Rector, the Rev. J. F. Groves, M.A., Angus Henry Campbell, M.B., Ch.B. Edin., B.Sc., D.P.H., only son of the late Alexander Campbell and of Mrs. W. M. Campbell, of Edinburgh, to Helen Lucy, younger daughter of Mr. and Mrs. J. E. Stansfield, of Caburn, Halland, Sussex.
FINLAYSON—LAWSON.—On Jan. 25th, 1928, at the Cathedral Calcutta, John Taylor Finlayson, elder son of the late J. H. Finlayson and of Mrs. Finlayson, of Kingswood, Surrey, to Miriam Lawson, M.R.C.S., L.R.C.P., only daughter of the late Dr. H. A. Lawson and of Mrs. E. Lawson, of Celci, Epping.
MOSS—EDGE.—On Jan. 26th, at St. Gregory's Church, Cheltenham, Dr. Leslie Newell Moss, of Ipswich, to Hilda Mary Cécile, elder daughter of R. C. Edge, late P.W.D., India, and Mrs. Edge.

DEATHS.

BRAMWELL.—On Jan. 19th, of pneumonia, Hugh Ransom Bramwell, M.B., in his 66th year.
MILLIGAN.—On Jan. 25th, at Cheyne-walk, Northampton, Robert Arthur Milligan, M.D., M.R.C.S., L.R.C.P., aged 69 years.
WEBSTER.—On Jan. 26th, at Inverkip, Ryde, I.O.W., Lieut.-Colonel C. G. Webster, F.R.C.S. Edin., I.M.S. (retired), aged 56.
WILSON.—On Jan. 12th, at Rollestone, Southbourne, Bournemouth, R. O. Murray Wilson, M.R.C.S. Eng., L.R.C.P. Lond.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

INDEX TO "THE LANCET," VOL. II., 1927.

THE Index and Title-page to Vol. II., 1927, which was completed with the issue of Dec. 31st, is now ready. A copy will be sent gratis to subscribers on receipt of a post-card addressed to the Manager of THE LANCET, 1, Bedford-street, Strand, W.C. 2. Subscribers who have not already indicated their desire to receive Indexes regularly as published should do so now.

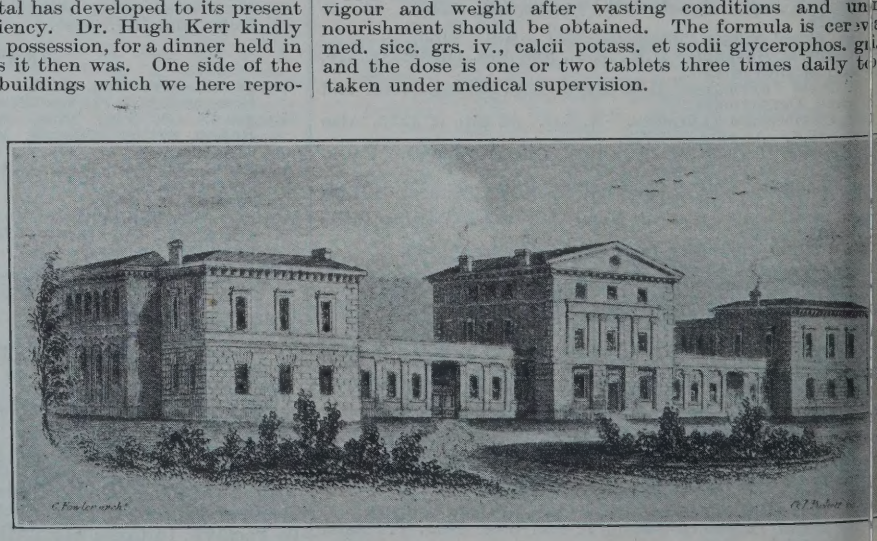
Notes, Comments, and Abstracts.

VILLEMIN AND THE ELIMINATION OF TUBERCLE.

Jean-Antoine Villemin, professor in the Army Medical School of Val-de-Grâce, was the first to prove (in 1860–61) that tubercle was spread by infection, and to propose reasoned measures for its prevention. The centenary of his birth was celebrated in Paris last October, as our correspondent then noted (THE LANCET, 1927, ii., 1257), and a fuller account is now given in the *Archives de Médicine et de Pharmacie Militaires*. Among the guests were Sir Matthew Fell and Major Voncken, President and Secretary respectively of the Committee of the International Association of Military Surgeons, whose fifth congress will take place in London next year, under General Fell's presidency. Prof. A. Calmette, who presided over the scientific meeting at the Val-de-Grâce, said that, as a recent example of Villemin's teaching, over 48,000 French children had been rendered immune to tuberculosis by B.C.G. vaccine, given by the mouth in the first fortnight of life, during which the intestines are permeable to the bacilli. Similar protection was now being given subcutaneously to older children, and he called attention to the experiment of inoculating 200 nurses in training at Oslo for tuberculosis work. Dr. Rousseau, of the Medical Service of the Colonial Army, said that in Indo-China 20,000 infants had been inoculated with B.C.G., and over 800 in Senegal. Dr. Grosfillez, of the same Service, said that in 1923 the phthisis death-rate of "native" troops employed in France was, for Senegalese, 14 per 1000; for Malagasy, 6·6; for men from Indo-China, 10. Active measures were taken, and half of the detachments of 1925 were protected by B.C.G.; this year the inoculation will be repeated for the Senegalese, and the results minutely examined. Figures are not available, but the results so far are considered encouraging. For the prevention of tuberculosis in the Navy, a matter which is giving the authorities some concern, Surgeon-Captain Gazamian proposed that no one should be allowed on board with open tuberculosis, while doubtful cases should be carefully watched, and, if necessary, eliminated. Some people, he said, laugh at such proposals—"the Navy is not a pre-tuberculous colony"—but to neglect them costs the public dear. Men who work within the armour should sleep in the open air, at any rate in peace-time, although (be it noted) the paymaster's staff and the telegraphists who live high up have more tubercle than the engine-room staff in the depths. Food and clothing are now good on French ships, personal cleanliness is easy, and antituberculous propaganda assiduously pushed in films, lectures, tracts, and by games. Fonssagrives, the great French naval hygienist of 1860, said that disaster came to the ship whose men did not sing. The incidence of phthisis had dropped from 12·5 per 1000 in 1900 to 5 in 1920–26, but still compared unfavourably with 2·7 (2·24 in 1924) in the English, and 2·85 in the United States Navy.

THE LONDON FEVER HOSPITAL.

THE death of Sir Mackenzie Chalmers, recently noted in our columns (Jan. 21st, p. 142), was a reminder of the London Fever Hospital as it is, for it was largely owing to his untiring effort that the hospital has developed to its present level of equipment and efficiency. Dr. Hugh Kerr kindly sends us a ticket, now in his possession, for a dinner held in 1850 in aid of the hospital as it then was. One side of the ticket gives the view of the buildings which we here reproduce, whilst the other states that a public dinner for the benefit of the London Fever Hospital (Patron, H.R.H. Prince Albert) will take place at the Freemasons' Tavern on Tuesday, May 14th, 1850, the Right Hon. the Earl of Devon, President, in the chair. The stewards were to be His Grace the Duke of Buccleuch, the Earl of Carlisle, Lord Robert Grosvenor, Lord Ashley, the Master of the Temple, W. A. Anderson, Esq., J. A. Bostock, Esq., Dr. Bushnan, R. H. Coote, Esq., Thomas Corney, Esq., Dr. C. J. Cox, the Rev. Dr. Cumming, Richard Davis, Esq., W. T. Dyer, Esq., W. Everett, Esq., Henry Hyde, Esq., Dr. Jones, Dr. Jenner, V... Lawrence, Esq., J. L. Mallett, Esq., Dr. Roget, ... Rev. Edward Scobell, Dr. Southwood Smith, San... Turner, Esq., Henry Wakefield, Esq., John Ashton Ya... Esq., and James Yates, Esq. The ticket, whose p... was one guinea, is signed by the secretary, Charles H... of 33, Ely-place; it bears the number 329, and conclu... with a statement that dinner will be on the table ... half-past 5 o'clock.



The London Fever Hospital, Liverpool-road, Islington, as it was in 1850.

LETTERS TO YOUNG DOG OWNERS.

Major A. J. Dawson's book (London: Philip Allan ... Co., Ltd. 1927. Pp. 157. 6*s*.) is a collection of ess... on dogs and dog management, and is illustrated by e... excellent photographs. It is written in a persuasive ... conversational way, and he has succeeded in preventing ... instruction from appearing didactic. The book d... thoroughly with the choice of a new dog, with its installat... feeding, and housing, with showing, breeding, and ca... societies, and can be strongly recommended, especially ... those who are becoming owners of dogs for the first tin...

NEW PREPARATIONS.

FROM the firm of Hans Potratz, Hamburg, we have recei... specimens of *Introcid* in bottle and capsule form and ... *Dextrocid*. The claims of this iodine cerium prepara... and its derivatives to be useful in sepsis associated ... the puerperal state, in malignant disease, and in other ser... conditions are voluminously supported by quotations f... the German medical press, favourable results emana... in particular from the gynæcological wards of the Ru... Virchow Hospital in Berlin. A paper in the *Veteri... Record* suggests that introcid has been found usefu... distemper, and from other communications it app... that detailed information can be obtained from the Insti... for Cancer Research in Berlin.

"*Wellcome*" *Brand Schultz-Charlton Test Solution.*—... serum of a patient taken about ten days after defervesc... from scarlet fever will, in virtue of its antitoxic cont... when injected intradermically into the rash of other sc... fever patients, produce a characteristic blanching of ... rash at the site of injection. This Schultz-Charlton reac... is a valuable aid in the diagnosis of "doubtful sc... fever." It is usually carried out with scarlet fever a... toxin made in the horse. Such antitoxin is availabl... this solution. Ordinarily 0·2 c.cm. of a 1 in 10 or a 1 ... dilution with normal saline solution is injected intrader... ally into the skin of the chest, abdomen, or forearm, w... a uniform scarlet fever rash not more than 70 hours ... is available. A blanching from 10 to 40 mm. in diam... makes its appearance in from four to ten hours, and per... from 12 to 72 hours. A positive blanching result, so fa... is known, justifies a definite diagnosis of scarlet fever. ... solution is issued by Burroughs Wellcome and Co. f... their physiological research laboratory in phials contai... 1 c.cm. and 5 c.cm.

Cerevisiæ Compound.—This preparation, put up in ta... form, is supplied by Messrs. Barnold, Ltd., Milverton-st... Kennington, London. It is a compound of yeast ... glycerophosphates, and experimentation on mice and ... supports the manufacturer's opinion that restoration ... vigour and weight after wasting conditions and un... nourishment should be obtained. The formula is cer... med. sicc. grs. iv., calcii potass. et sodii glycerophos. gr... and the dose is one or two tablets three times daily t... taken under medical supervision.

A Record

OF

FIFTY CONSECUTIVE CASES OF PREGNANCY AND PARTURITION IN PATIENTS WITH CRIPPLED HEARTS.

A Paper read at Liverpool Medical Institution.

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AND

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OUR object is to correlate the difficulties and dangers of pregnancy and labour with the disadvantages and disabilities of valvular disease of the heart. For the last five years we have watched and kept records of pregnant women suffering from valvular disease who have passed through our rest home and maternity hospital. In many instances they have subsequently been kept under observation at the Heart Clinic of the Royal Infirmary. We have also discussed with colleagues in the maternity hospital the various difficulties and problems as they presented themselves. It is more than probable that the type of case met with in the rest home and maternity hospital, and on which this record is based, is on the whole of a more serious nature than the average type of case.

Various Practical Problems.

The problem is one of considerable practical importance and confronts us in various ways: 1. Is marriage advisable in the presence of a crippled heart, appreciated either by valvular disease or by gross arrhythmia? 2. Should a pregnancy be terminated or allowed to go to full term? 3. If it is to be terminated, when and how? 4. If to full term, what can be done to help the heart during the stress of labour? 5. After the birth of the child how is the patient to be managed?

Pregnancy and labour, even under normal conditions, place the heart under strain. It is essential that we should fully appreciate the nature of this strain when considering the reaction of a crippled heart to pregnancy. The circulation is embarrassed in three ways: 1. The weight of the patient increases. The work of the heart varies with the weight of the individual. 2. The placenta, the large uterus with hugely dilated vessels, the growing breasts, all make extra demands on the maternal heart. 3. The large uterine tumour after the sixth month interferes with the movements of the diaphragm; there are changes in the shape of the chest; the circumference increases; the costal angle widens; the heart is pushed up and out. In later months the bases of the lungs are compressed. Pressure shows itself in varicose veins, piles, and œdema.

Many of these effects are more noticeable in a primigravida, and there is gradual increase in the difficulties and discomforts as pregnancy advances. The crucial test, however, is the hour of deliverance.

The period of dilatation, from the commencement of labour until the cervix is completely dilated, does not put a severe strain on the heart, although the pains may cause a condition of general exhaustion, especially if the first stage is unduly prolonged. There is both general and nervous exhaustion, and pain, fatigue, and sleeplessness are the detrimental factors.

The period of expulsion, from complete dilatation of the cervix until the birth of the child, is the important phase. With each pain the patient braces her body, gets her feet against something solid, takes a deep inspiration, closes the glottis, and makes forcible straining movements with the abdominal and respiratory muscles, accompanied by a grunt. Her face becomes congested and may be covered with sweat. In a patient with valvular disease cyanosis is frequent. As the pain subsides the glottis is opened and respiration re-established. During each pain the arterial blood pressure is raised and the heart quickens. Prolongation of this stage may cause very great physical and cardiac exhaustion.

Between the birth of the child and the birth of the placenta there is a sudden drop in the blood pressure. The patient may collapse and there may be severe hæmorrhage.

I think it will be readily admitted that pregnancy and labour do throw a definite strain on the heart, a strain which may be very great if labour is unduly prolonged, and in which the reserve power of the heart is called upon to meet the stress. The crippled heart is less equal to meet this severe call on its powers. Three points must be remembered: 1. In rheumatic valvular disease the myocardium is probably damaged as well as the valves. 2. In mitral stenosis, the commonest lesion: (*a*) the output of blood per minute is considerably diminished, and is probably not more than 2 to 5 litres; (*b*) there is persistent engorgement of the alveolar walls, and an engorged alveolar wall is inelastic; (*c*) there is frequently emphysema, especially in the long-standing cases, with the inevitable dependence on free movement of the diaphragm. 3. Auricular fibrillation is a grave handicap to any heart and a very serious additional load in pregnancy and labour. It is probably the most disastrous of all the cardiac disabilities in labour.

Bearing these facts in mind it is clear that in pregnancy and parturition there is an increased liability to cardiac failure, and it is this liability which has to be met and diminished by careful supervision and treatment.

Evidences of Cardiac Failure.

A mild degree of *dyspnœa* is usually a feature of the last month or two of every pregnancy. In cardiac cases it manifests itself earlier, especially in those with emphysema. It may become excessive, preventing recumbency and interfering with sleep.

Pain is not common, but there may be an ache over the cardiac thrust.

Œdema of the bases of the lungs is suggestive of commencing cardiac failure.

A steady increase in pulse-rate, progressive venous engorgement and cyanosis are clear and important danger signals.

The extent and severity of symptoms must be the guide to management.

Table I. shows the very large preponderance patients suffering from mitral stenosis.

TABLE I.—*Classification of Cases.*

Congenital heart	1
Mitral stenosis—	
Moderate degree	20
Advanced degree	15
Mitral stenosis and aortic regurgitation	7
Aortic regurgitation	2
Auricular fibrillation—	
With advanced mitral stenosis	4
" " and aortic regurgitation	1
Total	50

Of these: Primipara, 13; deaths, 3. Multipara, 37; deaths, 2.

TABLE II.—*Ætiology: In 26 Cases of V.D.H. in Pregnancy.*

	Age at onset.	No.	
Chorea	8 to 20	9	21
Chorea and rheumatic fever	8 to 15	3	
Rheumatic fever	15 to 25	3	
Rheumatic pains	11 to 16	3	
Growing pains and sore-throats	—	2	
Acute rheumatism	26	1	
Scarlet fever	12	1	
Scarlet fever and muscular rheumatism	6	1	
Scarlet fever and growing pains	—	1	
No history of any illness	—	2	

The ætiology was carefully investigated in 26 patients, and was interesting from the cardiological

point of view. It demonstrated the preponderance of chorea and rheumatism as the primary cause of valvular disease. In several instances there were acute rheumatic manifestations after parturition.

The Frequency of Hæmoptysis.

We noted a peculiar liability to hæmoptysis among pregnant women, and our records showed that it occurred in 30 per cent. Of the 38 cases of mitral stenosis 11 suffered from hæmoptysis; of 8 cases of mitral stenosis and aortic regurgitation 2 suffered from hæmoptysis; while 2 out of the 4 cases of auricular fibrillation combined with mitral stenosis suffered from hæmoptysis. It is noteworthy that the tendency is for the hæmoptysis to occur in the earlier months of pregnancy, before the uterine condition can be said to have interfered mechanically with the circulation. Records of 75 non-pregnant patients suffering from mitral stenosis in the wards of the Royal Infirmary showed that the incidence of hæmoptysis in this series was 22·7 per cent. Cowan and Ritchie give 17·6 per cent. for hæmoptysis in cases of mitral stenosis. Table III. gives details of these 75 patients.

TABLE III.

—	No.	Hæmoptysis.	Remarks.
Mitral stenosis	25	6	Three of the 6 cases were admitted with acute cardiac failure, dropsy, &c. One had subacute infective endocarditis.
Mitral stenosis and aortic regurgitation.	9	3	One of the 3 died of subacute infective endocarditis, and in 1 there was terminal thrombosis of right jugular vein.
Auricular fibrillation and mitral stenosis.	41	8	Four of the 8 were admitted with acute cardiac failure. Another died. In a sixth X rays reported T.B., but no T.B. was found.

It is obvious that in this series the cardiac disease was graver in type than that found in the pregnancy series, so that I think there can be no doubt that we have a definite predisposition to hæmoptysis among pregnant women with mitral stenosis.

Auricular Fibrillation.

Auricular fibrillation does not in itself justify induction until specific treatment with digitalis has been given a full trial and has failed. In this series there are five patients in whom fibrillation was present, with one death—a death not due primarily to the cardiac condition, but to the associated grave kidney disease. In this woman induction was performed at 36 weeks and the patient died of uræmia. In the remaining four labour was normal, precipitate in one, and premature in another. All were patients suffering from advanced mitral stenosis, and had been under careful supervision and treatment during the later months of pregnancy, and I have no hesitation in saying that it was to this that they owed their lives.

In one of the four full doses of digitalis had steadied the heart and everything was progressing favourably until the patient returned home and ceased taking any medicine for nine days. She returned to the maternity hospital with the onset of labour, in great cardiac distress with a heart-rate between 140 and 150. She received great benefit from the intravenous injection of strophanthin, which acted with sufficient rapidity to control the heart before the onset of the second stage.

Dr. Leyland Robinson recently reported the deaths of four patients admitted urgently for delivery, suffering from auricular fibrillation that had received no treatment previous to admission. This indicates the increased risk to life when untreated auricular fibrillation is present. He later [1] reported 18 cases of pregnancy complicated by auricular fibrillation, which had not received adequate antenatal care. Many of them were frankly emergencies. Of these 13 died and, with two exceptions, death was immediately related to labour. Herrick [2] records three patients w valvular disease and auricular fibrillation in a se of 40 patients; one had a normal labour, and in t he procured therapeutic abortion at the second third months respectively. The outlook in patie suffering from auricular fibrillation depends on results of specific treatment with full doses of digita and the careful supervision of the terminal month pregnancy, and assistance during the second stag labour. It depends also on the degree to which fibrillation is distressing and handicapping the he In this hearts vary. As soon as the child is viable sign of progressive cardiac failure justifies interventi

Termination of Pregnancy: Induction v. *Cæsarea Section.*

This raises the question of the relative value induction and Cæsarean section. In Table patients are classified according to the nature of termination of pregnancy.

TABLE IV.—*Manner in which Pregnancy Termina*

13 primipara with 3 deaths; 37 multipara with 2 deat

Natural Forces (28)—	
Congenital cardiac	.
Mitral stenosis: moderate	.
,, advanced (D)	.
Mitral stenosis and aortic regurgitation	.
Aortic regurgitation	.
Auricular fibrillation and advanced mitral stenosis	.
Forceps (3)—	
Mitral stenosis: moderate	.
,, advanced	.
Induction (13)—	
Mitral stenosis: Moderate	.
,, advanced (D)	.
Mitral stenosis and aortic regurgitation	.
Auricular fibrillation, advanced mitral stenosis, and aorti regurgitation (D)	.
Cæsarean (5)—	
Mitral stenosis: moderate	.
,, advanced (D)	.
Undelivered (1)—	
Mitral stenosis: advanced (D)	.

It is not easy to determine the relative valu induction and Cæsarean section, and each case to be decided on its merits. The first aim is to en the uterus with the least strain to the mother's he the second is to obtain a living child when poss even by a post-mortem Cæsarean section. I Blair Bell emphasised the following points:—

1. "All other things being equal, induction of labo a less severe procedure than Cæsarean section.

2. If there is any considerable degree of contractio the pelvis Cæsarean section should be considered: (*a*) the point of view of the child; (*b*) from the point of of long and difficult labour even after induction.

3. Induction should be practised three to four w before the expected date of parturition, if the full be is to be obtained for the mother.

4. A grave difficulty arises in the presence of a brea compensation associated with œdema. Both proce become more grave, and it might be necessary to put induction, because of the extensive œdema of the v In these circumstances one might be compelled to Cæsarean section with spinal anæsthesia.

These are, of course, general remarks; every case mu considered absolutely on its own merits; fatness, thin multiparity, and so on, influence the decision."

Bellingham Smith,[3] of Guy's, comparing the dan of induction with those of labour, says:—

"Induction, if anything, is a more serious trial labour at term, and I hold the view that those patients would survive induction would pass equally well thr labour at full time, and that those who appeared like die in the course of labour were equally as likely to d the result of induction."

The matron of the maternity hospital, who has a very wide experience, has been impressed by easy labour following induction in most ca patients. The actual strain to the mother is prob less with a Cæsarean section, but there is gr distress and discomfort during the subsequent or ten days. The convalescence is not infrequ painful and the sleep disturbed. On the other h Cæsarean section saves the heart from the stra the second stage of labour with its obvious risks

[1] THE LANCET, 1927, i., 170.

[2] Amer. Jour. of Obstet. and Gynecol., 1922, iv., 83.

[3] Brit. Med. Jour., 1925, i., 442.

desirable the woman can be sterilised. This is sometimes deferred to the second Cæsarean section. My impression is that the induction of labour is the wiser course unless there is a clear indication that, from any cause, labour is likely to be long and difficult and the viability of the child is in question. It is generally agreed that induction is more easily induced and less of a trial in a multipara than in a primigravida. If Cæsarean section is carried out under general anæsthesia there is the danger of subsequent vomiting and of bronchitis or broncho-pneumonia—serious complications in a patient with advanced mitral stenosis. Fortunately spinal anæsthesia can be used to obviate the risk. The best general anæsthetic is ether or ethanesal as a vapour, warmed by Shipway's apparatus and accompanied by oxygen.

The Fatal Cases.

In this series of 50 consecutive cases there are five deaths, and it was a little disturbing that the first and second patients in the series both died. It is significant that there was no death from acute cardiac failure of the ordinary type during or immediately after labour. A short epitome is given below of the five fatal cases.

CASE 1.—Aged 24; multipara. Advanced mitral stenosis. Large heart. Left rest home after five weeks treatment, free from œdema. Five days later, normal labour, eight months' child. On tenth day got up and œdema returned. Death 24 days after labour. Cause unknown.

CASE 2.—Aged 30; multipara. Mitral stenosis and aortic regurgitation. Fifty-four days before labour sudden onset of auricular fibrillation followed by acute cardiac distress. Temporarily controlled by intravenous strophanthin and digitalis. Signs of nephritis. Condition became critical. Induction thirty-second week. Anuria and death from uræmia 0 hours after delivery. Autopsy: "Large white kidney."

CASE 32.—Aged 35; primipara. Advanced mitral stenosis; slight regurgitation. Parenchymatous nephritis. Cæsarean section at 31 weeks. Died three days later, comatose; uræmia.

CASE 46.—Aged 21; primipara. Advanced mitral stenosis; slight regurgitation. Clinical signs of nephritis, slight and atypical. Died suddenly undelivered at 36 weeks from acute pulmonary œdema. Autopsy: "Acute parenchymatous nephritis."

CASE 48.—Aged 29; primipara. Advanced mitral stenosis. Premature labour at 34 weeks. Clinical signs of acute parenchymatous nephritis more marked after labour. On eighth day insisted on leaving hospital. Died thirteenth day after parturition.

There was no evidence of nephritis in the earlier stages of pregnancy. An autopsy was obtained in two of the four patients and, in the opinion of the pathologist, the nephritis was of recent origin.

Damaged Kidneys.

The toxic albuminuria of pregnancy sometimes proceeds to marked degeneration or even necrosis of the renal parenchyma. There is also the "nephritic toxæmia" of pregnancy, which may be the result of the deleterious toxic effects of pregnancy upon a kidney already pathological. In such patients the symptoms appear early in the pregnancy. The four patients in our series do not conform to either of these groups. Nor do they, in the details of their symptomatology, fall accurately into line with the usual examples of acute or subacute parenchymatous nephritis. It would appear that a woman with advanced mitral disease is liable to develop an atypical form of parenchymatous nephritis as a result of pregnancy, and that this manifests itself late in pregnancy and greatly increases the gravity of the outlook. It is significant that in four of the five fatal cases there was grave kidney damage, and I have no doubt that this rather than the valvular disease was the determining factor responsible for death. The combination of mitral stenosis with chronic nephritis is well known, and is more common in women than men. Pregnancy may be the determining factor in this preponderance.

Management after Labour.

Pregnancy and parturition cause less permanent damage than one would expect. It is remarkable how satisfactorily most cardiac patients progress after labour is past, if they have been carefully piloted through the difficulties and adequately treated before, during, and after labour.

Unassisted labour at full term in a decompensated heart (even if the patient survives) will probably leave the heart permanently less efficient. Patients with advanced aortic regurgitation are especially liable to suffer, but moderate grades of aortic regurgitation with a good myocardium tolerate labour well.

Since there is, after labour, a risk of permanent depreciation of the heart muscle, great care should be taken to enable the myocardium to recover fully before allowing the patient to return to the ordinary stress of life. A long period of rest must be enforced. Any anæmia should receive prompt and adequate treatment.

It is not unusual for a woman to put on weight rapidly after the birth of a child. For this there are probably several reasons, one of which is a condition of hypopituitarism, which may result from the over-activity of the pituitary during pregnancy. This increase in weight is a real danger to a woman with a damaged heart. Obesity must be prevented or treated, for as everyone knows, the work of the heart bears a definite relationship to the weight of the body.

In our experience there is no valid objection to lactation; in fact our patients appeared to do better when suckling. The artificial feeding of a child entails more labour and strain on a heart than the normal method.

Survey of General Conduct.

Pregnant women with diseased hearts must be treated primarily as cardiac patients, and the first indications of cardiac failure noted. They must be under regular medical supervision throughout. Among the poor an antenatal clinic and a rest home are of the very greatest value. In every patient the reserve power of the heart must be increased by adequate rest and symptomatic treatment. Rest is essential, more especially in the four to six weeks before labour. Dyspepsia, flatulency, constipation, insomnia, bronchitis, and other discomforts must be remedied. If there is auricular fibrillation it must be controlled with digitalis and the optimum dose found and maintained. Any woman with auricular fibrillation must be kept under constant supervision.

During labour the aim is to lessen the nervous and physical exhaustion of the first stage and to diminish the physical strain of the second stage. Light anæsthesia during the second stage is helpful, and narcotics are valuable; they reduce the voluntary effort. An early resort to instrumental help is most important.

In the earlier months cardiac failure which refuses to respond to treatment justifies immediate intervention, especially if there be persistent retching and vomiting. At times there is a peculiar and unexplained cardiac failure in earlier months—certainly not due to mechanical causes—which resists treatment and is only relieved by terminating the pregnancy. Induction, however, should never be attempted until compensation has been restored as far as possible by rest and drugs. The stress of labour is likely to prove fatal to a woman whose heart is already struggling with difficulty to maintain the circulation.

Experience has shown that the majority of women with crippled hearts, in whom the cardiac reserve is good, are capable of pregnancy and labour without any great additional risk. This is especially true if the cardiac lesion is not progressive and if there is no history of a previous cardiac breakdown. There is admittedly an increased risk, but it is one that many women are prepared to take and which is not unreasonable under constant supervision. In multiparæ a knowledge of the manner in which the previous pregnancy was tolerated is an excellent guide.

Veto on Child-bearing.

The mere presence of mitral stenosis or even aortic regurgitation, the occurrence of premature beats, the existence of cardiac pain and tenderness over the cardiac thrust, and the presence of cardio-respiratory bruits, do not in themselves justify a childless

marriage. So long as the cardiac reserve is good, so long as the response to effort is satisfactory and there is no undue enlargement of the heart, the presence of valvular disease is no bar either to marriage or pregnancy. When, however, there is a clear history of cardiac failure and distress during a previous pregnancy, and if it is known that after labour convalescence was unduly prolonged, owing to cardiac weakness, then a definite veto must be given. Such a decision is all the more imperative if the cardiac distress had increased as pregnancy progressed and become urgent and alarming during the act of parturition.

The same opinion is justifiable in cases with auricular fibrillation; advanced mitral stenosis, as shown by a large heart, a long diastolic bruit, and small cardiac reserve; and advanced aortic regurgitation with a big heart, Corrigan's pulse, and defective reserve.

It is the borderland cases that present the greatest difficulty. In them any abnormality in the pelvis likely to prolong labour becomes of very great importance.

A pregnant woman who is aware of her cardiac disability should be reassured. Too often the risks are unduly stressed, and her pregnancy is overclouded by fear and apprehension—an apprehension frequently aggravated and intensified by a fussy spouse. The necessity for careful supervision must be emphasised, and the importance of rest and sensible behaviour discussed with her quite freely. Motherhood is woman's peculiar privilege and prerogative, a privilege which we have no right to refuse her without adequate reason.

Pregnancy inevitably entails certain risks, which a woman accepts in order that she may have a child. A crippled heart is an added risk, and it may be an unjustifiable risk. But the more I have studied these patients the more I have been impressed with the wonderful manner in which their hearts have responded to care and treatment during pregnancy. I believe that a woman with valvular disease is entitled to know to what extent the normal dangers of pregnancy are increased by her cardiac lesion, and if she is prepared to face the ordeal, then we must do all we can (and we can do a very great deal) to minimise the dangers of pregnancy and parturition by constant supervision and prompt and efficient treatment—both medical and surgical.

A CRITICAL EXAMINATION OF SOME CASES OF A SCARLATINIFORM TYPE.*

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Historical.

To Sydenham is due the differentiation of scarlet fever from morbilli, and only comparatively recently has rubella been recognised as a distinct disease; as late as 1895 Donald Hood, among others, inclined to the view that rubella as a separate entity did not exist. In 1884 Filatow observed an epidemic in one family which he thought was an abnormal form of scarlet fever, and told the parents that their children would, as a consequence, be protected against this disease. But in 1885 scarlet fever attacked three of the children who had been affected in the previous epidemic. He then described, under the name of scarlatiniform rubella, an infectious disease, acute, contagious and epidemic, characterised by a scarlatiniform rash, but distinguished by the mildness of its course and other peculiarities. In 1886 he abandoned this view and thought he had to deal with an ordinary rubella with a polymorphic rash, but later still he inclined to the view, formulated by Lebert in 1851, that morbilliform rubella and scarlatiniform rubella should be considered two distinct diseases. In 1894 Dukes published an instructive paper on the features which distinguish epidemic roseola (roserash) from measles and from scarlet fever. In 1900 he published in THE LANCET his paper on the fourth disease.[1] In 1901 Weaver (M.O.H., for Southport) in a paper published in the Dublin *Journal of Medical Science*,[2] described several cases occurring in the Borough Fever Hospital in 1900.

In THE LANCET (1900, ii., 289) Sir William Broadbent stated that he accepted "without hesitation the differentiation of rubella into two distinct diseases which Dr. Clement Dukes has made." Drs. Kidd and Romer also supported this view, while abroad Trammer, Bokai, Ruhemann, Unruh, Ardin Delteil and Chenisse all reported epidemics resembling Filatow-Dukes disease. My own experience of some 73 cases fully agrees with the accounts published by Dukes and Weaver, and, as far as it goes, the description given by Filatow, and I am convinced that these cases are not aberrant forms of either scarlet fever or rubella. Dr. H. Aldersmith, my predecessor at Christ's Hospital for 44 years, saw several small epidemics and was definitely of the opinion that Dukes was right. On the other side, in most modern text-books, fourth disease is usually only alluded to when discussing the differential diagnosis of scarlet fever and rubella. J. D. Rolleston, in his book published in 1925,[3] gives an account of it under its own name, but sums up against it as a separate entity. Prof. Teissier, of the Paris Faculty of Medicine, gives a good account of the discussions that had arisen around it in his book on infectious diseases published in 1922,[4] but sums up against Dukes, though he makes no mention of any personal experience of the disease.

In favour of the separate entity many authorities state that the diagnosis of rubella is often difficult owing to the variety of type of rash or to the indefinity of incubation, while the Code of Infectious Diseases in Public Schools, first published in 1889 by the Medical Officers of Schools Association, has in all its eight editions stressed the difficulty of diagnosis in scarlet fever.

In January, 1920, Dr. C. R. Box[5] wrote to THE LANCET describing certain cases which were then being sent to the London Fever Hospital as scarlet fever, but which were in his opinion atypical, and contrasted these cases with those described by Dukes as fourth disease. His letter was headed, Is there a Para-scarlet Fever? A short correspondence ensued from this letter which neither advanced nor disproved the thesis. On August 19th, 1922, Dr. F. Simpson,[6] in an article in THE LANCET, described a series of cases admitted to the Croydon Borough Hospital. Fifteen cases occurred in a diphtheria ward, apparently from a convalescent diphtheria patient who was found to be desquamating, and about the same time thirteen or more cases were discovered among the admissions to the scarlet fever wards. He gave the apparent incubation among the diphtheria patients as "about three days," but otherwise his description of the symptoms and the rash agrees practically word for word with my records of the cases I have called para-scarlet A. For the sake of brevity I have drawn up a table of different diagnosis for morbilli, scarlet fever, para-scarlet A and B and rubella. He concludes with these words:—

"There would seem, finally, little or no justification for including the above series of cases as falling within the province of rubella any more than within the hazy and ill-defined boundaries of a so-called fourth disease, while the distinctness of the type from ordinary scarlet fever is practically certain. Although it is not pretended that the foregoing remarks are at all exhaustive of the several exanthematous conditions which have from time to time been described under the name of a fourth disease, it yet seems justifiable to conclude that mild scarlet fever, possibly and as suggested of the nature of a para infection, may be responsible for many instances of an exanthematous outbreak resembling scarlet fever but described as a 'fourth infection.'"

In THE LANCET (1923, i., 950) there appeared an article by Dr. H. M. Raven,[7] describing a series of 12 cases which occurred in a school of 80 girls and staff, as an epidemic of fourth disease, with which diagnosis I was inclined to agree when I first read his

* A paper read before the Fever Group of the Society of Medical Officers of Health on Nov. 25th, 1927.

article in MSS., but on re-reading it in print I am bound to confess that the evidence seems to favour very decidedly the diagnosis of scarlet fever. The occurrence of albuminuria and secondary enlarged glands, and especially the fact that the second batch of cases occurred six days after the return of the maid (who had tonsillitis seven days before the first batch) from sick leave, is strongly suggestive of scarlet fever. On the other hand, three of the staff subsequently developed the disease 18–20 days after the second batch of girls, and another girl was taken ill at home 20 days after the first batch and diagnosed independently as mild rubella. The case can undoubtedly be argued either way without the possibility of a definite conclusion.

The historical ground, therefore, proves that I do not need an excuse for the subject of this paper. Indeed, I think that when the clinical facts of the fourth disease are fully and fairly considered there is ground for maintaining that it is a separate disease, and I suggest that there are probably two forms of this pseudo-scarlet fever, and that when all the facts are considered they will be found to be to scarlet fever what the para-typhoids are to enteric fever.

Experience at Christ's Hospital.

During the 14 years I have been medical officer to Christ's Hospital Boys' School at Horsham I have seen and treated about 1200 cases in which rashes of a morbilliform or scarlatiniform type were present. 1044 of these were definite cases of exanthem, and the remainder include food or drug rashes, urticarias, and eczemas. Before 1916 I was familiar with Dr. Clement Dukes's description of fourth disease, but had never to my knowledge seen a case.

Between September, 1913, and March, 1916, there occurred at Christ's Hospital six cases of definite scarlet fever in two batches of five and one respectively; one batch of six cases of doubtful rubella, and 109 cases of definite rubella in six batches, the largest being an epidemic of 82 cases in the summer of 1915, when also the single case of scarlet fever occurred. There were also 15 cases of rubella, coincident with five cases of scarlet fever in the Lent term of 1915. With these exceptions all the cases occurred in small batches, presented no difficulties in diagnosis, and were easily stopped by early isolation, thorough disinfection, and the tracing of contacts where possible. Up to this date no rationing of food had come into force, and the outbreaks of exanthemata in the training camps all over the country did not start on any large scale until late in 1915 or early in 1916.

In the epidemic of 82 cases of rubella in the summer of 1915 I was struck by the fact that many rashes were erythematous from the start and never papular, and that none of the patients was ill in proportion to the amount of rash. As a rash of this type is described as the third variety of rubella rash I accepted them as such, though clinically some of the cases rather resembled mild scarlet fever. The incubation periods were unknown.

In the summer of 1916, however, a big epidemic of 204 cases occurred. This started at the beginning of term as ordinary rubella, and went on as a mixed epidemic of rubella, scarlet fever, and what I regarded then as fourth disease, to which I propose to allude below as para-scarlet A. In this epidemic, also, the incubation periods were difficult to make out, owing to the numbers and cross-infections which at first were unavoidable. According to my classification the cases were as follows:—

11 scarlet fever with	1	death, and	0	other cases of complication
45 para-S.F.A.	„ 1	„	8	
148 rubella	„ 0	„	0	

—i.e., a total of 204 cases with a mortality of 1 per cent, or 5 scarlatiniform cases with a mortality of 4 per cent.

There were no cases of cross-infection between scarlet fever and para-scarlet A. Two boys developed scarlet fever five and six days after admission with rubella, both probably, but not certainly, by cross-infection. Two boys developed para-scarlet A 15 and 34 days after admission with rubella. There was no possibility of cross-infection in either case. The first might have been infected with para-scarlet A just before admission, but the second must have been infected after admission, and it is to be noted that he developed para-scarlet A 15 days after the last definite case of scarlet fever.

Of	11	scarlet fever cases	none	gave a previous history of	scarlet fever or rubella.
„	45	para-scarlet	3	gave a history of recent	rubella.
„	45	„	3	„ „ „	scarlet fever.
„	148	rubella	1	„ „ „	rubella.
„	148	„	4	„ „ „	scarlet fever.

Dr. F. A. Juckes, of Horsham, and Dr. Rawdon Wood, then acting M.O.H., saw several of these cases of para-scarlet A, and both agreed that they were not at all typical scarlet fever cases. The latter told me that he had had two outbreaks with similar cases among troops near Brighton that year. Other cases were reported at Aldershot.

The following term there were five isolated cases of para-scarlet. The first occurred eight days after the school returned, and I am satisfied that infection was acquired during the holidays, but there was one boy isolated in the infirmary from the epidemic of the term before. There was no possible direct contact with him, and indirect contact was practically out of the question, as he had his own nurse and was on the top floor of the building, and the new case had not visited the infirmary before coming over with para-scarlet. I mention this as it will be noticed that the cases of para-scarlet occur in three groups, each group involving two consecutive terms. In the winter 1920—Lent, 1921, group the second batch occurred two months after term had begun. Although in the Lent-summer, 1922, group the second batch began with a case seven days after the beginning of term, and the four cases the previous term occurred at the end of term, if the house incidence and class contacts are ruled out, as they can be, there is no reasonable doubt that this too is an infection acquired during the holidays and not a reinfection at the school.

From the winter term of 1916 to the winter term of 1920 there were no cases of scarlet fever or para-scarlet, since when there has been one epidemic of scarlet fever with 15 cases, and four small outbreaks of para-scarlet A. There has been one large epidemic of rubella since the Lent term 1917. The two epidemics described below illustrate the importance of the incubation period and the difficulty of diagnosing a severe and fully developed case of para-scarlet from scarlet fever.

Winter, 1922.—Fifteen cases of mild scarlet fever, except that one boy had simple endocarditis. There were definite contacts in each case, the longest incubation being six days. The epidemic began from a boy who proved to be a carrier after a mild unrecognised attack during the holidays. He infected three boys after being back at school 15 days. The first case came in on Sept. 29th, just 15 days after the beginning of term. His was a very mild infection, and the possibility of a 15-day incubation made the diagnosis between mild scarlet fever and para-scarlet A difficult, until another case occurred, as his rash was fully out on admission. Two more boys from the same house came in on Oct. 4th (six days later), also very mild in type. The same evening I examined every boy in the house and found that the monitor in the same dormitory as the two last boys was peeling on both feet in large flakes. (Being a monitor he had been allowed, unofficially and unfortunately, to escape the matron's inspections.) I isolated him at once, and next day found a small slough hidden between the right tonsil and the posterior pillar of the fauces. A swab from this gave a growth of a hæmolytic streptococcus in large numbers. On cross-examination he gave a history of having been at various camps all August, and of having felt ill one day with a slight sore-throat on returning home in the first week of September. He had noticed that his hands peeled slightly about a week after, and his feet began to peel about the time he came back to school—i.e., about 14 days after the throat. This history would do very well for para-scarlet A, and at first sight the apparent incubations of the three cases would support this, but on further inquiry a definite single contact with the first boy, dating three days before his illness, was discovered, and the carrier was found to have been in closer contact with the other two in the dormitory during the second week than during the first week of term. This supported the diagnosis of scarlet fever and the subsequent cases gave definite house

TABLE OF DISTINGUISHING FEATURES.

—	Morbilli.	Rubella.	Scarlet fever.	Para-scarlet A. (Fourth disease.)	Para-scarlet B. (Epidemic roseo of Dukes.)
Incubation.	10 days to prodromata. 13–14 days to rash, body. 10–16 days extreme limit.	No prodromata. 12–16 days to rash. 14–15 average.	1–6 days. 4 average.	(?) 8–12 days. 10 average.	12–16 (? 22) day 14–15 average.
Prodromata.	Fever with remissions. Coryza. Sneezing. Cough at first hard and dry. Malaise 2 or 3 days.	Usually no fever. Occasionally sneezing; slight sore-throat.	Continued fever. Vomiting. Sore-throat. Headache and pain in back and limbs. Sometimes rigor.	Fever unusual. Occasionally slight sore-throat or headache. Often entirely absent.	Usually entire absent.
Temperature.	101–104 or more. Often remits. lasts 4–8 days.	Often none. May be 103. If present always remits. Lasts 1–3 days.	101–103 mild cases. 103–106 severe. Usually continued. Lasts 4–8 days.	Often none. May be 104. Usually normal or 99 in 24 hours.	Usually none 99, and norm in 24 hours. O casionally high
Pulse.	In proportion to fever.	Unaffected.	Much out of proportion to fever.	Often unaffected, if quick, not in proportion to fever.	Usually unaffect
Malaise.	Considerable.	Usually absent.	Considerable.	Usually absent, if present is very short. (*See A at foot.*)	Usually absent
Eyes.	Red, watery, with marked photophobia.	Pink, but without any photophobia as a rule.	Bright.	Usually unaffected.	Unaffected.
Mouth.	Koplik's spots appear 2 days before rash on body in 75 per cent. of cases.	Rash appears on soft palate at the same time as on body.	Gums injected, but no typical rash.	Mucous membrane, as	a rule, unaffecte
Throat.	Tonsils and palate red and swollen.	Tonsils red but not septic.	Tonsils dark red like raw beef. Sloughy or follicular.	Tonsils red, usually not so sloughy as in S.F.	Tonsils usual unaffected.
Nose.	Occasional epistaxis.	Epistaxis rare.	Epistaxis rare. Nose clean.	Epistaxis common. Nose and sinuses blocked with thick pus often from onset.	Epistaxis rar Nose clean.
Tongue.	Thick white fur. Rarely peels.	Normal or slight fur. Never peels.	Covered at start with thick yellowy-white fur (white strawberry) through which the enlarged papillæ show red. In 4 to 5 days peels from edges and tip, backwards (red strawberry).	Moderate fur or normal. Papillæ may be enlarged. If furred peels quickly on 2nd day. Not typical strawberry.	Usually unafecte
Glands.	Cervical, swollen, tender, seldom suppurate. Body, unaffected.	Cervical, chain of posterior glands enlarged, may be hard or soft. Often not tender. Axillary and inguinal often affected.	Tonsillar and anterior cervical, large and tender. There may be a good deal of periadenitis and even suppuration. Often there is a secondary adenitis during convalescence. Body not affected.	Tonsillar enlarged. Often not tender. Never suppurate. Axillary and inguinal sometimes affected.	Usually no affected.
Rash.	Appears 3rd to 4th day in the mouth; 2nd day (Koplik's spots). After the mouth appears on face and behind ears, then generally on body and limbs. Consists of red papular dots which enlarge and coalesce into irregular crescents and patches. May resemble urticaria in pressure areas. Brick-red at first, then dusty. Skin stained after rash has gone.	Appears usually first day of disease. Often is first thing noticed. Usually first on face and chest, spreading thence to body and limbs. Often coalescing to resemble in parts the rash of morbilli. The typical rash consists of discrete rose-red papules. If profuse, skin may be left stained.	Appears usually 1st to 2nd day of disease. Begins on chest and then spreads in regular order over trunk and limbs from above, downwards. Never on face, soles, or palms. Circum-oral pallor is marked. Is a diffuse punctate erythema. Skin is markedly hot to the touch.	Appears 1st to 4th day of disease. May be first thing noticed. Usually begins over lower abdomen and upper and inner thigh area; then inside knees and ankles. May spread thence irregularly over body. Face often puffy but not definitely erythematous. Palms and soles may be involved. Is a diffuse erythema occasionally punctate, especially over pressure areas.	Resembles i general featur distribution a onset, that para-scarlet but is usual much less inten and often lar areas of the bo are unaffected.
General constitutional symptoms.	In proportion to the amount of fever and rash.	Usually slight.	In proportion to the amount of fever and rash.	Markedly slight in proportion to fever and rash.	Usually ver slight.
Desquamation.	Branny.	Branny, if any.	Usually complete and massive. On tongue from 4th to 8th day. On body commences as a fine peach bloom below clavicles about 8th day, followed by fine desquamation spreading thence over trunk and limbs. (*See B.*) Lasts 8–28 days or longer.	Occasionally absent. When present tongue peels completely in 1–2 days, usually on 2nd or 3rd day of disease. On body, varies fromnone, to slight branny, to shreds, but is not "glove" or typically "pin-point." Lasts 1–3 weeks, may be longer.	Tongue neve Body usual absent; if it c curs, resembl that of par scarlet A.
Period of infectivity.	From start of prodromata (at maximum before rash is out on body) for about 14 days, if throat, ear, and kidney are then clear.	Over with rash. Maximum before rash is out.	Probably from start of prodromata (maximum during 1st week) till end of 3rd week if throat, ear, and kidney are then clear.	Probably from start of prodromata (maximum before rash is out on body) for about 10 days if throat and sinuses are then clear.	Over with ras Maximum befo rash appears.

A = Patient feels well and can read books even with considerable fever, in striking contrast to condition in S.F.
B = Later on scales and shreds, especially on limbs; "glove" peeling on hands and feet, and "pin-point" on trunk and limbs distinctive.

TABLE OF COMPLICATIONS AND SEQUELÆ.

—	Morbilli.	Rubella.	Scarlet fever.	Para-scarlet A. (Fourth disease.)	Para-scarlet B. (Epidemic roseola of Dukes.)
Kidneys.	Transient albuminuria rarely during fever. Nephritis very rare.	Transient albuminuria very rare. Nephritis never.	Transient albuminuria during fever common. Nephritis fairly common.	Transient albuminuria during fever rare. Nephritis very rare, if ever.	Transient albuminuria very rare Nephritis never.
Lungs.	Bronchitis practically a symptom of the disease. (*See C.*)	Nil.	Pleurisy, especially after pneumonia, if this occurs.	Nil.	Nil.
Heart.	Rarely affected.	Never.	Endocarditis, simple, not uncommon; infective, uncommon. Myocarditis, not rare.	Endocarditis, as in scarlet fever.	Never.
Middle ear.	Pneumococcal infection common.	Never unless previously affected.	Streptococcal infection common.	Infection uncommon.	Never.
ntra and frontal sinuses.	Pneumococcal infection occurs.	Not unless previously affected.	Antral and frontal sinus infection uncommon.	Antral and frontal sinus infection *common and early.*	Not unless previously affected.

C = Pneumonia and broncho-pneumonia common in some epidemics, apart from crowding, &c.

class contacts of two to six days, confirming the diagnosis. ne carrier and one other boy were said to have had pre-ous attacks of scarlet fever in 1909 and 1916 respectively, it both at home. One boy had had rubella.

Summer, 1922.—Para-scarlet A. Seven mild cases, cept for one boy who had had definite severe scarlet fever home in 1912. In the present attack he was not at first ry ill. His aspect was typical of severe para-scarlet A, se blocked with muco-pus, voice thick, tongue not thickly rred, temperature high, but pulse-rate not in proportion to ver. The rash came out on the second day, first on the wer abdomen and groins, then knees and feet, and then l over. With this he did not at first feel very ill, but on e third day he suddenly became delirious and developed gns of meningeal irritation. He was then treated with veral doses of polyvalent antistreptococcic serum, and ereafter steadily improved, being well out of danger in o days. Of the seven cases three had had definite pre-ous scarlet fever, and one definite previous rubella. able II.)

ABLE II.—*Infectious Diseases occurring at Christ's Hospital, September, 1913 to July, 1923.*

term.	Morbilli.	Scarlet fever.	Para-scarlet.	Rubella.	Pink-eye.	Year and term.	Morbilli.	Scarlet fever.	Para-scarlet.	Rubella.	Pink-eye.
13.						1921.					
W.	26	—	—	3	—	L.	61	—	2 A	—	—
14.						S.	—	—	—	1	—
.	—	—	—	1	—	1922.					
W.	—	—	—	5	—	L.	—	—	4 ? B	—	—
15.						S.	—	—	7 A	1	—
.	21	5	—	15	—	W.	—	15	—	—	—
S.	1	1	—	82	—	1923.					
W.	—	—	6 ? B	—	—	W.	—	?2	—	—	—
16.						1924.					
L.	—	—	—	3	—	S.	—	—	—	1	1
S.	—	11	45 A	148	—	1925.					
W.	—	—	5 ? B	—	—	L.	—	—	—	275	—
17.						1926.					
L.	59	—	—	54	236	L.	142	—	—	9	1
S.	—	—	—	2	—						
19.											
S.	27	—	—	—	—						
920.						Total	337	34	58 A	600	238
W.	—	—	4 A	—	—				15 B		

1918.—Nil. L = Lent; S = Summer; W = Winter.

The epidemics of scarlet fever, para-scarlet, and ubella have only occurred together once—viz., in ne summer term of 1916, when there were 148 cases rubella, 45 of para-scarlet, and 11 of scarlet fever. carlet and para-scarlet occur in two groups; from ne Lent term of 1915 to the winter term of 1916 arlet fever occurred three times and para-scarlet ree times, but only once coincidently. From the inter term of 1920 to the winter term of 1922 scarlet ver occurred once and para-scarlet four times, but ot coincidently. Rubella occurred coincidently ith scarlet fever three times in the first group, and with para-scarlet twice, once in each group. Table III. gives these dates graphically.

Rubella occurred in nine other terms unaccompanied by either scarlet or para-scarlet fever, the numbers in each epidemic being 3, 1, 5, 54, 2, 1, 1, 275, and 9. In none of these outbreaks were there any cases of

TABLE III.

Year.	Term.	S.F.	Para-S.	Rubella.
1915	Lent	5	—	15
	Summer ..	1	—	82
	Winter	—	6	—
1916	Lent	—	—	3
	Summer ..	11	45	148
	Winter	—	5	—
1920	Winter	—	4	—
1921	Lent	—	2	—
	Summer ..	—	—	1
1922	Lent	—	4	—
	Summer ..	—	7	1
	Winter	15	—	—

erythematous rash. Morbilli epidemics occurred four times in association with rubella and once with para-scarlet, and once alone, in the summer term of 1921, in the Preparatory School. In the Lent term of 1917 there was an epidemic of 59 cases of morbilli, together with one of 54 cases of rubella which was associated with 236 cases of pink-eye. This is the only epidemic of pink-eye I have seen in ten years. Other isolated cases have occurred from term to term, but it has never become epidemic, possibly because each case is now immediately isolated until cured. It is highly infectious, and I have often noticed occasional cases occurring during an outbreak of rubella.

In a school run on the lines of Christ's Hospital it is possible to trace out contacts in most epidemics until the third or fourth batch of cases, when the incubation periods become concurrent or overlap, as one can find out the movements and whereabouts of any boy for any hour of the day. My experience is that the dormitory and dayroom are more probable areas of infection than classrooms, with the exception of the art and manual schools, but that the tuck shop is a congregational danger-spot that unfortunately defies too often the efforts of the epidemiological detective. In 1916 I satisfied myself and the art master that infection was conveyed from boy to boy by pencil and paint-brush, and a system of routine disinfection with formalin was instituted and is still carried on. The para-scarlet epidemic of the summer of 1922 showed another unsuspected focus in the art models; it was proved that the two boys concerned here had not used the same tools, but had, in

consecutive periods, sat at the same table and used a common model.

Diagnosis of Para-scarlet A and Para-scarlet B.

The diagnosis from scarlet fever of the para-A variety is a matter of some difficulty and, with a first case, depends mainly on seeing the rash come out. The rash usually begins over the bathing drawers area and spreads from there both up and down very quickly. It spreads up the trunk to the neck and face, though the circum-oral and post-auricular regions often escape. It spreads irregularly down, appearing first at the inner sides of the knees and ankles, and from there over the legs and feet. The arms are usually invaded last. The other outstanding features are the very slight constitutional disturbance, as compared with the profuse rash, and the absence of the typical tongue and throat. The diagnosis of this variety from rubella presents less difficulty. The incubation period is from 8 to 12 days, usually 9 or 10.

The para-B form corresponds to the milder form of scarlatiniform rubella (the epidemic roseola of Dukes). Here the whole picture is very mild and the rash often indefinite and very patchy, large areas often escaping invasion. The incubation period is from 12 to 22 days, usually 14 or 15 days.

In four of the outbreaks of para-scarlet A, where it is possible to trace contacts, there were found to be known contacts between cases giving incubation periods of 9 to 15 days. It is hardly possible that an unknown S.F. carrier would be missed in four different outbreaks, or that if he were missed the epidemics would have stopped with so few cases. This suggests that we have to deal with a disease that in many respects resembles scarlet fever, but which differs from it in definite symptoms and which has an incubation of 9 to 15 days, or possibly longer. Either this disease is not scarlet fever or the incubation period of scarlet fever is longer than six days.

In Osler[8] the rash of rubella is described simply as papular; in Allbutt and Rolleston[9] as papular or pseudo-crescentic, and mention is made of an aberrant scarlatiniform type, but in all the school books dealing with infections that I have seen three types of rash are given: (1) the rose-red papule; (2) the crescentic morbilliform; (3) the erythematous or scarlatiniform. It is also stated that a constant sign is enlargement of the posterior cervical glands. Now I have never found a typical chain of enlarged posterior cervical glands in cases of the so-called erythematous type of rubella where the rash is erythematous from the start. In my experience the enlargement of these glands is most marked in the papular variety, and present, but less markedly so, in the morbilliform type of case. This is what one would expect if it is a defensive enlargement.

I believe that there is only one anatomical type of rash for any one acute infection, and it is my experience that in true rubella the rose-red papule is always present at first, but in moderately severe or serious cases it tends to become confluent in areas, giving the crescentic or morbilliform appearence. It is surely unscientific to expect the toxin of an acute fever to produce more than one type of rash. A mild dose of scarlet fever toxin dose not produce a morbilliform or rubelliform eruption; why, therefore, should the rubella toxin sometimes produce a scarlatiniform rash? Undoubtedly cases occur of a scarlatiniform rash associated with enlargement of all the cervical glands, but not especially the posterior, and these cases appear to have a long incubation of 15 or more days, with a possible maximum of 22 days, thus resembling the incubation period of rubella.

I suggest that these erythemata with longer incubation periods are para-scarlet B. The fact that three types of rash are described, and that so many names have been attached to the disease, is good evidence that there is a considerable diversity of opinion about rubella.

I suggest that there are two para-scarlet fevers and a scarlet fever, and not one scarlet fever, one fourth disease, and a third variety of rubella. The first two types of rubella, as commonly described are, I believe, one—the papular which may become confluent. The third type I believe to be para-scarlet B. Thus we have:—

Scarlet fever	Incubation	1–6 days, commonly
Para-scarlet A (fourth disease)	,,	9–15 ,, 1
Para-scarlet B (scarlatiniform rubella)	,,	14–22 ,, 1

I also believe that the causative organism is a hæmolytic streptococcus, and I think there is an increasing body of evidence in favour of this view.*

Complications and Treatment.

Para-scarlet B is very mild and only requires rest in bed during the period of the rash, an initial purge and a regular mouth-wash. A precautionary examination of the urine after the appearance of the rash is advisable.

Scarlet fever and para-scarlet A may be taken together. Severe cases of para-scarlet A can be much worse than the modern form of scarlet fever. It may assume a fulminating or malignant form with death in a few hours from a massive dose of toxin. On the other hand, it may be very mild from the start. The complications of the para form differ markedly from those commonly associated with scarlet fever. Septicæmia and endocarditis may occur but the commonest complication (almost a symptom) is a purulent infection of any of the accessory sinuses of the face, and very occasionally the middle ear. The two antra or the frontal sinuses are often attacked at the commencement of the illness, and require very frequent and active treatment. I have not seen nephritis or rheumatism either as an early or late complication in para-scarlet. Albuminuria is usually absent even in the acute febrile period. I use Milne's method of inunction with eucalyptus oil combined with painting the fauces with 25 per cent. carbolic in glycerine, and so far I have found this perfectly safe in preventing the spread of infection, so much so that when pressed for room I nurse the cases in a small ward in the general block on the same floor as the general work. If the ordinary work is heavy it is wise to have a special day nurse to carry out the main treatment, but if it is not I let one nurse attend both infectious and non-infectious cases. I have not so far had a case of cross-infection under these conditions. The inunction is done all over twice daily during the first week or while the fever lasts, whichever is the longer, and then once daily for a second week. The throat is swabbed thrice daily at first, with a cotton-wool swab on a stick or glass rod and not with a paint-brush. The paint forms a clean scar over the mucous membrane and can be changed for a carbolic and potash gargle as soon as the throat is clear of exudate, usually in two days. It is important to prevent spread from the mouth and throat, and also from the ear, if there is any otorrhœa. Every case should have a nasal douche given with a soft catheter and funnel at least three times a day so long as there is any discharge or secretion in the posterior nares. Bad cases may require douching every two hours. Before I insisted on this as a routine I saw two cases of para-scarlet in which a membranous cast of the posterior nares formed during the first two days of illness and caused very considerable trouble. I find the best lotions for nasal douching are the eucalyptus colloid made up in half the strength advised on the label, or pot. permanganate 1/10,000. The usual pill and senna should be given in every case the first or second day, and I usually give at the start the first night a powder of aspirin grs. v., phenacetin grs. iiss and pulv. ipecac. co. grs. iis., and repeat if the temperature does not come down.

* This was originally written in 1923 before the general acceptance of the *Streptococcus hæmolyticus*, and before the Dick and Schultz-Charlton tests were available in this country; as will be evident from the dates of my epidemics I have since had no opportunity of using these tests in corroboration or the reverse of my thesis.

I now give as a routine an initial dose of 10 to 20 c.cm. of polyvalent antistreptococcic serum (B. W. and Co.) to all cases of both scarlet and para-scarlet A, and repeat this in 10 c.cm. doses if the temperature has not markedly fallen in 24 hours. I am sure that this shortens the toxic stage, and either checks the supply or helps the elimination of toxin, thus lessening the chance of complications. It also seems to shorten the period of convalescence.

The importance of distinguishing these diseases from one another is twofold :—

(1) As the cases quoted by Filatow, Dukes, Weaver, and myself show, neither scarlet fever, the para forms, nor rubella protect against each other, and a wider recognition of their separate nature will help to prevent the admission of the para forms into hospital with cases of scarlet fever.

(2) Recognition will facilitate the early discharge of the para B and the mild cases of para A from hospital; there are few, if any, medical officers who would regard it as safe or expedient to liberate a case of scarlet fever, however mild, under four weeks; while the majority of cases of para A and all of para B can be discharged to ordinary life with perfect safety in two weeks. This is important on the grounds of finance, public opinion, and school management.

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THE CONSERVATIVE MASTOID OPERATION.

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IN this paper I propose to show to what an extent a change in physiology may prove an aid to surgery in restoring the hearing of the discharging ear. Few medical men realise that the largest ear hospital in this country, probably, indeed, in the world, is maintained by the Metropolitan Asylums Board and is known as the Downs Hospital for Children. Hundreds of children are sent thither every year for mastoid operations, mostly for the cure of chronic aural suppuration, often on both sides. The resident surgeons of this hospital have therefore unique opportunities for practice and experience. A recent annual report of the Board contains a contribution by Dr. Anthony Wrench (assistant medical officer at the Downs Hospital), entitled Some Guiding Principles in the Post-operative Treatment of Mastoid Disease. A note runs thus :—

"These remarks apply to the radical and Heath's conservative mastoid operations. The Schwartze operation is now never performed at the Downs Hospital, as this method of dealing with mastoid disease has not infrequently been found to be followed by dangerous recurrences. The dressings also are more painful; the scar is unsightly; and, worst fault of all, the site of the antral cavity and the drum-head are left practically inaccessible."

These four reasons are given by Dr. Wrench for the definite decision of the resident staff at the Downs Hospital to discontinue the performance of mastoid operations by Schwartze's method. I propose to deal with them seriatim and then to add some others.

Dangerous Recurrences.

The Schwartze operation, designed for the cure of acute mastoiditis (i.e., pus pent up in the mastoid antrum) in early cases of otitis media, is not infrequently followed by recurrences of the acute condition which are dangerous because this operation does not provide for permanent outward drainage of the antrum. This cavity is the only part of the ear in which septic discharge is likely to be pent up so as to destroy life and is also, in chronic cases (in the absence of adenoids and tonsils) the source of that persistent discharge which, in its passage through the tympanum, perpetuates disease there and thus destroys the hearing. At the Ninth International Otological Congress (in America) I cited the statistics of six different observers, embracing 739 mastoid operations for the cure of discharging ears (360 of them my own at the Throat Hospital), in which, without a single exception, disease was found in the mastoid antrum both in acute and chronic cases. This dangerous mucous cavity, less than a pea in size, surrounded by bone, lined with a variable mucous membrane, drained inwards to the tympanum by a tiny channel (the aditus), and situated barely one-sixteenth of an inch (often indeed less) from the brain and the lateral sinus, is only accessible for treatment, surgically or otherwise, by means of a mastoid operation. Operation has proved to be the best remedy in disease of the mastoid cul-de-sac, just as it has in appendicitis.

I have seen dangerous cases of recurrence after the Schwartze operation, most often in public hospitals, such as the Downs, and at fever hospitals, and always in patients who had undergone operations elsewhere. The conditions in these recurrent cases may be as bad as, or indeed worse than, those existing at the time of the original operation. I was gratified, therefore, to learn from Dr. Wrench's article that the Schwartze operation had been abandoned at the Downs Hospital.

Painful Dressings.

The problem of painful dressings in children is so serious that if it had not been solved it is doubtful if the Downs Hospital could have been maintained. Elsewhere I have known chloroform given as often as twice a week for six months for the dressings after Stacke's (radical) operation. Manifestly this would be impossible for the 150 children at the Downs Hospital. At this hospital the after-treatment designed by me (of which Dr. Wrench's article gives the guiding principles) enables one person to dress over 100 patients in a morning. These dressings are carried out more easily after the conservative operation than after any other, because the mastoid antrum—the only part packed—has purposely been rendered easily visible and accessible through the meatus.

An elderly doctor, on whom I recently operated to save hearing, and who feared the operation mainly because of what he described as "the horribly painful dressings" he had previously seen after Schwartze operations, wrote from the country three weeks later, when he had quite recovered: "The painlessness of the dressings has most deeply impressed me."

Unsightly Scars and Inaccessibility.

After the Schwartze operation the wound is left open and disfigurement results; I have, indeed, known plastic operations to be necessary.

The inaccessibility of the mastoid antrum is responsible for danger, and even loss of life, in recurrences after the Schwartze operation, because it does not secure that severance of the mastoid antrum from the middle ear, which is an essential feature of my operation. I ensure that the antrum—through the complete destruction of its lining mucosa—shall permanently cease to be a mucus-secreting cavity draining inwards through a very narrow channel into the middle ear; that it shall be severed from all connexion with the middle ear; that it shall open widely outwards, and become part and parcel of an enlarged and dry external auditory meatus, widely open to the air, so that discharge cannot possibly be pent up. This constitutes a complete physiological change in the function of this dangerous, mucus-secreting cavity, and necessitates a surgical re-arrangement of the hinder end of the middle ear. This rearrangement has a double purpose; first,

that of ensuring the immediate and future safety of the patient's life, and secondly, of arresting the septic antral discharge and resulting tympanic destruction, in order to save the hearing. The procedure entails the removal of nearly the whole front wall of the antrum, so that it is as widely open and as easily visible and accessible as the meatus itself. It was because the tiny antrum is embedded in bone in a dangerous locality and therefore cannot, like the cæcal appendix, be completely removed, that I devised this method of rendering it permanently safe. I have only seen two recurrences of acute otitis media after operations by my method, one 10, the other 14 years later—each being due to a "cold in the head"—a complication against which we can never permanently provide. In each case both the safety-valves gave way under pressure, so both are obviously required. One is the thin membrane which forms across the aditus after the operation (thus separating the antrum from the middle ear), the other is the scar which heals the perforation of the drum-head. Neither of these patients was away from work during the short period of healing. To one patient I was called too late, and I know of other recent recurrences of mastoid disease after the Schwartze method which also ended fatally in spite of repeated operations within four months of the original treatment.

The less serious recurrences after Schwartze operations, admitted into the Downs Hospital, are usually dealt with as follows: (1) A conservative mastoid operation is performed through an entirely fresh skin incision farther forward and close to the ear (as in a primary conservative operation); and (2) the disfiguring scar, and the suppurating sinus, if present, are excised and the wound sewn up. In this way future danger and disfigurement are both obviated.

Prolonged After-treatment.

Open wounds are left after the Schwartze operation and sometimes these never heal; consequently the disfigurement and the foul and visible discharge are a life-long nuisance. Considering the complete and rapid cure effected by timely conservative mastoid operations, even when both ears have been operated upon at one sitting, there seems no justification for allowing thousands of ears to be destroyed in London every year by prolonged suppuration. In the conservative operation there is no shock, pain, or loss of blood to cause anxiety and, but for the sickness from the anæsthetic, the patient would not be at all ill. Not only is the hearing restored, but if both ears are treated the patient seems subsequently to be proof against injury to the hearing by the concussions of big guns.

Facial paralysis and deafness are also liable to be induced during the Schwartze operation through injury of the nerve or dislocation of the incus, because of the difficulty in locating these structures. The tympanic ring and drum-head are not exposed for the purpose of locating them in the Schwartze operation, whereas in the conservative operation they are. This explains some of the hitherto inexplicable cases of deafness following the Schwartze operation.

Suppuration within the sheath of the temporal muscle is apt to occur both in Stacke's (radical) and in the Schwartze operation, because the sheath is opened and the exposed muscle may become involved in the septic process. In the conservative operation the sheath is not opened.

Schwartze's old and so-called "simple" mastoid operation, like the earliest abdominal operations, is altogether too primitive. It constituted an early phase in the genesis of aural operations. While abdominal operations have been improved out of all knowledge since their initiation, the Schwartze operation has remained what it always was—a mere emergency measure, hurriedly improvised to save life by providing temporary drainage for a dangerously situated acute abscess in bone. This operation does not secure the patient against an equally, or even more, serious recurrence; moreover, it was not devised for the preservation of the hearing. In my experience the Schwartze operation is a far more extensive proceeding than the limits of the disease usually justify.

Aural surgery is proverbially unsuccessful in saving the hearing, and it is important that the reason for this should be widely known, that nearly all mastoid operations are performed much too late—that is to say, after the hearing apparatus has been ruined by disease. This deplorable state of things usually arises from inability to diagnose the tympanic conditions; this is not surprising, since the necessary information is not given in any text-book. The surgeon who cannot diagnose these conditions cannot possibly know when he ought to operate to save the hearing. While he waits hearing is lost beyond recovery. It is in this disastrous condition of lost hearing from neglecting to operate when the hearing is endangered that most of the children are sent to the Downs Hospital for operation, and in consequence of this a large majority of the mastoid operations performed there are by Stacke's "radical" method. This operation may put an end to disease and danger, but it does not save the hearing; it was not devised or intended for that purpose. If these children are sent to hospital in time to save their hearing they all undergo operation by the conservative method. Last year no more than 105 cases were admitted for my operation, whereas 267 Stacke's radical operations were necessary. As this entails removal of the drum-head and ossicles, permanently defective hearing in a large majority of these children was the inevitable result.

I have persistently condemned the prolonged treatment of suppurating ears by syringing and drops, and the treatment by ionisation, now in vogue, is little if any, more effective. Thousands of the children who are being thus treated will never hear properly again; the disease has been allowed to exist too long. With few exceptions the longer the disease lasts the more damage is done to the hearing. Persistent suppuration in any situation is destructive, and it is especially so in the tiny channels of the ear.

Short of a conservative mastoid operation the earliest possible removal of adenoids offers far the best prospect of curing a suppurating ear. Attendance as an out-patient at a hospital or school clinic, for the treatment of a chronically discharging ear, is usually a waste of time and, through the delay in admission for operation, often results in the loss of hearing. Destruction of the ear through chronic suppuration is sometimes very rapid and, as pain may be absent, it may not attract attention.

After my introduction of the conservative operation at the Throat Hospital I performed 360 mastoid operations there with only one death; most of these were cases of acute mastoiditis arising in ears that had long been diseased, for which Stacke's radical operation had been previously designed and used. The average duration of the disease in these 360 patients was six years. The long delay was mainly due to lack of beds; but even six weeks is far too long to delay operation if perfect restoration of the hearing is to be made probable. These statistics indicate that a mastoid operation should not in itself be dangerous, though the conditions which call for it often are.

Summary.

The characteristics of the three mastoid operations can now be briefly summed up and compared.

(1) Schwartze's "simple" operation was devised as an emergency measure for use in early acute disease to save the patient's life. It is unsatisfactory, mainly because it was not designed to ensure the future safety of the patient. It has, moreover, many other very serious drawbacks, as pointed out by Dr. Wrench and described above.

(2) Stacke's radical operation was also not devised for saving the hearing, but for curing chronic disease, or acute mastoiditis arising in chronic cases—i.e., it also is life-saving, for the future as well as the immediate present. Nevertheless, it is unsatisfactory, entailing as it does the removal of the drum-head and

ossicles, and rendering the hearing permanently defective.

(3) My method, the conservative operation, besides being life-saving, immediate and remote, is the only one of the three which is designed to preserve the hearing. These twofold advantages are only rendered possible by the physiological change brought about in the function of the mastoid antrum—the distinctive and outstanding feature of the operation.

If the hearing of the persistently discharging ear is to be made and kept safe the only effective and permanent remedy available is a timely conservative mastoid operation—i.e., one which is performed in time to arrest the disease before it has ruined the ear.

ON PORPHYRIN IN THE MOUTH.

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I RECENTLY had the opportunity of observing a case of congenital hæmatoporphyrinuria, and this article describes an investigation to which the study of the patient gave rise. Various substances have been classed as porphyrins, partly because of their spectroscopic and other qualities and partly because of their chemical composition. The table shows some of the porphyrins as they are described in current literature with some of their properties. This list is still incomplete, and it is possible that in the future more porphyrins will be added.

Table showing the Qualities of Porphyrins Detected in the Urine.

—	Position of the two principal bands in HCl-acid solution.		Solubility in æther.	From HCl into chloroform.
Coproporphyrin	594	551	Soluble.	Does not enter.
Uroporphyrin..	598	554	Insoluble.	
Kämmerer's porphyrin	602	557	Soluble.	Enters.

The porphyrin hitherto found in the urine of the few cases of congenital porphyrinuria which have been thoroughly examined is uroporphyrin. The traces of porphyrin which can be found in the urine and fæces of normal persons are coproporphyrin.

In the fæces of healthy people who have eaten food containing blood and those of sufferers from gastric or intestinal hæmorrhage another sort of porphyrin is found; to this the name of Kämmerer's porphyrin may be given. This author prepared in vitro, by adding various microbes to blood, a sort of porphyrin, which had the same properties as the substance appearing in the fæces after partaking of meat or blood (Snapper, Pappendieck).

When trying to trace small quantities of porphyrin I made use of their property of displaying a red fluorescence in a dark room when irradiated with ultra-violet light with exclusion of the visible rays. The same method had already been used by other workers (Keller, Langecker, Derrien).[1] The fluorescence test must, however, be accepted with considerable reserve, for many reasons. The solvent and accompanying substances exert a great influence on the phenomenon, so that mixtures or impure solutions are often not fluorescent or do not give the typical colour. On the other hand, various substances (which are, however, generally related) can cause the same fluorescence. Chlorophyll in alcoholic solution, for instance, can produce a fluorescence very similar to that of porphyrin. This does not alter the fact that the phenomenon of fluorescence, on account of the extraordinary sensitivity and simplicity of the method, is of great value as a means of orientation, enabling us rapidly to trace small quantities of a substance. Solutions which appear to be completely colourless by ordinary light give a strong fluorescence. This physical property must, however, always be controlled by other physical and chemical investigations.

Fluorescence of the Teeth and Tongue.

Garrod's[2] work on porphyrinuria dates from 1892, and he was the pioneer of the clinical investigation of this pigment; he[3] and, later on, other English writers[4] noticed that in some cases of congenital porphyrinuria in children the teeth show a beautiful red fluorescence when irradiated with filtered ultra-violet light. My patient's teeth also showed a red fluorescence, not previously described in adults suffering from this disease. When, however, I examined several middle-aged healthy individuals, and patients of all kinds, the same fluorescence was seen in most of them. Closer examination showed that it was near to the implantation in the gums, and varied in amount in different persons. It was easy to demonstrate that this fluorescence was not caused by the dentine (as in Garrod's patient), but by the tartar deposited on the teeth. In the same way, in my case of congenital porphyrinuria it proved not to be the teeth themselves which showed fluorescence, but the tartar. The phenomenon in this case must, therefore, be quite different from that observed by Garrod. Moreover, the back of the tongue also showed a more or less visible red fluorescence in almost every case. Bommer[5] examined by filtered ultra-violet light various organs after death and also the skin and mucous membranes during life. He also found that the tongue and teeth displayed a red fluorescence and, in the latter, that it was the tartar which must be regarded as the cause of the phenomenon.

Porphyrin the Cause of the Fluorescence.

Bommer, however, made no chemical investigations into the nature of the substance causing the fluorescence. My line of research lay in determining whether or not the cause of the fluorescence of the tartar was porphyrin. Recently I learned that in 1924 Derrien,[6] studying porphyrin by means of filtered ultra-violet light, observed red fluorescent spots in fragments of teeth. These he ascribed to the action of microbes, making Kämmerer's porphyrin out of the blood of the foods. Derrien did not, however, actually examine the substance chemically or spectroscopically.

In order to get a sufficient quantity of substance I used a number of teeth extracted in the Dental Institute of the University. The tartar was scratched off and ground fine in a mortar. This powder showed a red fluorescence, as might be expected. By extracting it with a mixture of glacial acetic acid and ethyl-acetate (1 : 4) a solution was obtained which, after filtering, again showed a beautiful red fluorescence. This solution was shaken up with a small quantity of 5 per cent. hydrochloric acid. As is characteristic of porphyrin, the substance passed into the hydrochloric acid, which it coloured red if the concentration was sufficiently strong. The hydrochloric solution of the substance, separated from the upper acetic acid-ether layer in a separation funnel, gave a beautiful red fluorescence, and the typical spectrum of acid coproporphyrin. When the powder or the hydrochloric solution were extracted with chloroform the substance did not enter the chloroform. It is permissible to conclude that the tartar of the teeth contains a substance which, as far as can at present be traced, is identical with, or at least very closely related to, coproporphyrin. It is not difficult to understand how the porphyrin is deposited in the tartar. If an elderly person whose enamel is no longer perfectly smooth does not brush his teeth for one or more days (even this omission is not absolutely necessary) the teeth, some hours after breakfast, will yield a greater or lesser quantity of white deposit, "the materia alba" of Leeuwenhoek.[7] This deposit is soft, pappy, and easily rubbed off. The coating from the surface of the tongue and the dental deposit both give a beautiful red fluorescence in filtered ultra-violet light. If this material is extracted with a mixture of glacial acetic acid and ethyl acetate, the mixture washed out with water, from which it is separated in a separating funnel, and the acetic-ether-solution extracted with 5 per cent. hydrochloric acid, the resulting solution gives the spectrum of acid coproporphyrin. The porphyrin in

this deposit is retained by the calcium salts of the tartar. Tartar, indeed, consists largely of calcium salts, by which porphyrin is readily adsorbed. The material alba gives the fluorescent phenomenon, and —after extraction—the spectrum of coproporphyrin, after a breakfast consisting only of milk and bread, without any meat, blood-containing food, or green vegetables.

The Origin of Porphyrin in the Mouth.

The intensity of the red fluorescence of the materia alba was not greater on the parts touching the gums than it was further up towards the distal portion of the teeth. From this we may conclude that the porphyrin in the mouth does not necessarily arise from hæmoglobin (neither from the hæmoglobin contained in the food, nor from small hæmorrhages out of the gums). Nor is it formed out of chlorophyll from vegetable foods. (I once found the same red fluorescence in the tartar of a horse's teeth.) Moreover, the spectrum of the tartar and the tongue- and teeth-porphyrin does not correspond with that of the porphyrin formed by bacteria from hæmoglobin or that found in the fæces after swallowing blood. Microscopic inspection of a small quantity of the materia alba, smeared directly upon a slide or rubbed with glycerine and water, showed no traces of food particles. In patients who had only eaten bread, milk, and cereals I found no more starch a few hours later. Addition of lugol solution did not produce a blue colouring. Evidently all the residues of the food had been dissolved and the starch had been saccharified. The whole mass of materia alba appeared to consist of a dense net of threads (leptothrix), between which might be seen granules (spores) as well as bacteria. These slide specimens gave off an intense red fluorescence in filtered ultra-violet light. When, however, they were examined microscopically with ultra-violet filtered light the leptothrix threads did not produce fluorescence. After cultivation of the microbes of the mouth (leptothrix has not yet been cultivated on artificial media) we did not discover which of them gave rise to the porphyrin.

Another possible source of the porphyrin in the mouth is the saliva. We have already remarked that the urine of all normal persons contains coproporphyrin, though in very small quantities; we also found traces in the bile. It is probable, therefore, that under physiological conditions it may also be secreted by other glands, for instance, by the salivary glands—and we succeeded in extracting coproporphyrin from the saliva of normal persons in relatively greater quantities than from the urine. The absolute quantity in the saliva is, nevertheless, so small that it seems unreasonable to suggest that the relatively large quantities of porphyrin in the materia alba and on the tongue, formed in a short time, may be ascribed to the porphyrin content of the saliva.

Whether or not the microbes of the teeth play an important rôle in forming the porphyrin of the materia alba, the components of the food are its most likely source. As milk and bread had produced it we examined these foodstuffs for porphyrin and extracted it from both. Fischer had already shown that milk contained small quantities of porphyrin, and we extracted an even larger quantity out of bread. It further appeared that much larger quantities of porphyrin could be obtained from a mixture of milk and bread kept in the incubator for 24–48 hours at a temperature of 37° C., than from the same quantities of milk and bread kept separately. In ordinary baker's yeast kept in the incubator, as Fischer has discovered, large quantities of porphyrin are formed. After incubating yeast for three days we could even see the fluorescence by ultra-violet rays without previous extraction. The formation of porphyrin in bread might be attributed, therefore, to the living yeast cells which are always found in it, but this explanation does not seem plausible, because the cells in bread are so few. It seems more probable that microbes, developing in a mixture of milk and bread in the incubator, are responsible for the formation of porphyrin. It is noticeable that, whilst the mixture did not show a direct fluorescence after several days of incubation, and yeast only showed a faint fluorescence in ultra-violet light after three days, the materia alba of the teeth, which is formed in a few hours, showed an intensive fluorescence without previous extraction.

We do not yet know what happens to the porphyrin formed in the mouth. It is not unreasonable to suppose that a smaller or larger proportion of it is swallowed, but it is not known whether it is decomposed, absorbed, or excreted with the fæces, nor whether it may be a source of error in detecting traces of blood in the fæces according to Snapper's method, and if so how such error may be avoided.

Finally, it may be mentioned that the coating on the tongue which gives the fluorescent phenomenon can only be partially removed. After the surface of the tongue has been scraped rather vigorously it remains fluorescent in ultra-violet light.

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TWO CASES OF CONJOINED TWINS.

I.—A THORACOPAGUS.

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THE thoracopagous or xiphopagous twin monster is only one of the large variety of twin monsters described and classified by Schwalbe.[1] This type consists of two individuals, usually of the same size and always of the same sex, each trunk being complete with normal limbs and head, but joined down the front of the thorax to its twin, face to face. A living example, aged 18 months, has been described by Baudouin[2]; another case very similar to the present is described by Bennett and Patten[3]; and other cases have been described by Berry,[4] Crouzat,[5] and Condon.[6] A similar lamb monster has been described by Berry and Sinclair.[7] Omphalopagous twins, where the union is on the ventral surface but does not involve the thorax, are to be distinguished.

FIG. 1.

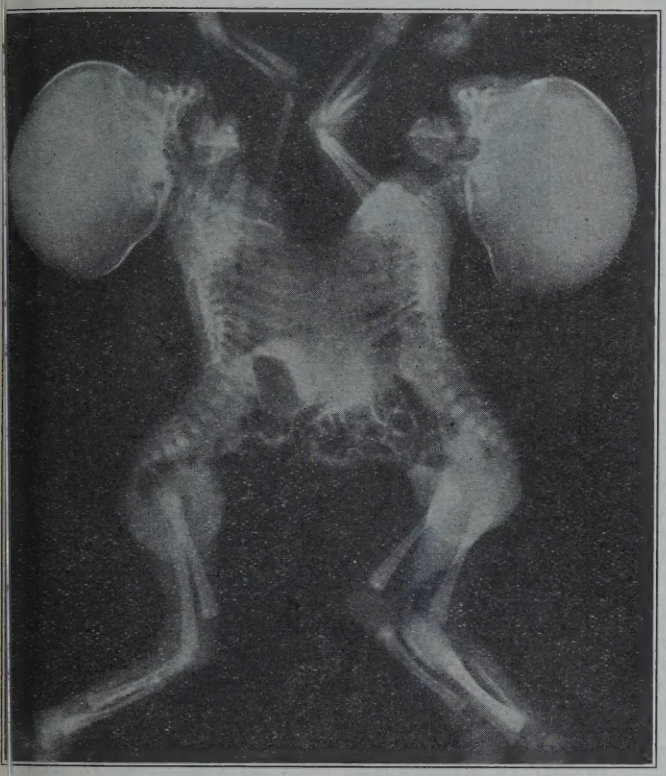
Photograph of the thoracopagous twins during life.

The monster here described was born at nearly full term, and survived four and a half days; its two components behaved as two separate individuals, and died within a few minutes of each other.

Antenatal Examination and Birth.

The mother, aged 27, had previously borne one ild. The delivery was normal, and the child is now ur years old and quite normal and healthy. The

FIG. 2.



Radiogram of the thoracopagus.

t period before the abnormal pregnancy ended on c. 20th, 1926, making the expected date of confine- nt Sept. 27th, 1927. The mother presented herself the antenatal clinic of the General Lying-in spital, York-road, on August 9th, 1927, and I am ebted to Dr. G. W. S. de Jersey, late resident dical officer at York-road, for the following ount of the antenatal findings and of the labour, ich was conducted in the patient's home by a trict midwife.

"August 9th: Liquor amnii above the average. Number limbs felt, — ? twins. One back felt to right, head well pelvis. Only one fœtal heart heard, out in right flank. be seen again on Sept. 6th.

"Sept. 2nd: Called at 4.30 P.M. History of membranes turing at 1 A.M., and slight pains since. Abdomen small, nor evidently having drained away. Head in pelvis. On h right side and left side what appeared to be a back. second head could be found, but an unusual number of bbly parts felt. No fœtal heart heard. Per vaginam: d well in cavity, membranes ruptured, os two-thirds ated. The pains were irregular and short. A soap-and- ter enema was given with good result.

"6.15 P.M.: Per vaginam, os only a rim all round; d seemed small, and delivery expected in a few good ns. After showing at the vulva, the head progressed y slowly, so it was delivered between pains by post-anal ssure. After delivery of the head, no progress was made h the next pain, so slight traction was exerted on the erior shoulder, which came down under the pubic arch. e head was carried forwards, and the posterior shoulder ught under the perineum. No progress was made, and he indefinite obstruction seemed to be occurring above pubes. Locked twins were suspected, and the following nœuvre was made: the shoulders were drawn back in, and the legs fell out under the pubic arch over the erior shoulder. Firm traction backwards was made on shoulders while the patient bore down with a good pain, an assistant used fundal pressure; the buttocks of the t baby were then born under the pubes, followed immediately by the legs and buttocks of the second baby, whose head must have gone back into the hollow of the sacrum, the child having performed version in the cavity of the pelvis. The bodies and legs were now lying forwards, and the head of the first baby backwards and externally near the anus, separated from the head of the second child, which was inside the pelvis, by the perineum. The head of the second child was now born easily, by carrying the whole mass forwards. One baby cried feebly and both breathed well. The cord was ligatured; the placenta was expelled in ten minutes. The placenta, membranes, and cord were normal. There was no damage to the perineum."

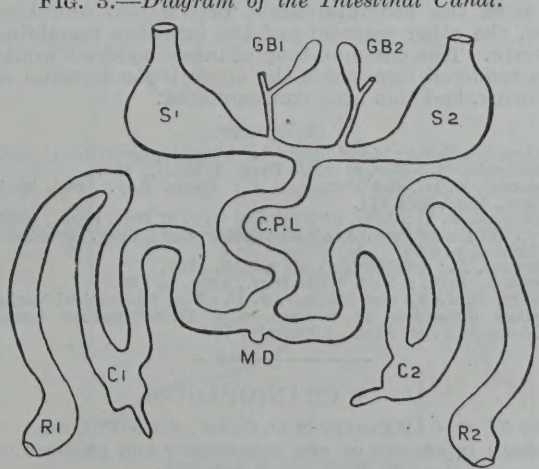
Subsequent History.

The monster was admitted to St. Thomas's Hospital on Sept. 3rd, 15 hours after delivery. The external appearance was of two complete female infants, joined together on their anterior surfaces from the angle of Ludwig to the umbilicus (Fig. 1). The area of fusion was 4½ inches long, and approximately 3 inches wide, occupying almost the full width of the anterior surfaces, and showing a sulcus on either side at the line of junction of the two bodies. A single ligatured umbilical cord entered at a common umbilicus at the lower end of the junction. One child was slightly cyanosed, the other a more normal colour. Both were approximately the same size, the total weight was ten pounds. All eight limbs were normal, and each twin cried and moved its limbs independently of the other.

Radiograms (Fig. 2) taken by Dr. Geoffrey Fildes, showed that there was no bony union between the thoracic cavities. Except for the sternal elements, which were displaced upwards and lay in the upper part of the junction, the skeletons were seen to be normal. The hearts and livers were in apposition, and probably fused; each twin was seen to possess its own stomach, but loops of intestine crossed from one to the other, the peritoneal cavity being evidently common.

The pulse- and respiration-rates of one twin differed from the rates of the other; simultaneous counts of the pulses being 120 : 128, 132 : 136, and 132 : 124 on different occasions while in hospital. The rectal temperatures varied between 95° and 97·6°, the cyanosed twin usually having a temperature about one

FIG. 3.—*Diagram of the Intestinal Canal.*



S_1 .. S_2	.. ..	Stomach of each twin.
$G.B._1$ .. $G.B._2$	.. ..	Gall-bladder of each twin.
C_1 .. C_2	.. ..	Cæcum " " "
R_1 .. R_2	.. ..	Rectum " " "
C.P.L...	.. ..	Common proximal loop of small gut (proximal limb of umbilical loop).
M.D.	.. .. ..	Meckel's diverticulum (blind).

degree below that of the other. On Sept. 4th both were taking water, and passing urine and meconium. Both cried feebly at times, but seemed

to have a very weak hold on life. On Sept. 5th the cyanosed twin was a better colour. They both took expressed breast milk in three-hourly feeds; they seemed stronger, and their survival appeared possible. The next day however they both became cyanosed and markedly weaker; the one originally cyanosed died at 6.30 A.M. on Sept. 7th, and the other died two minutes later.

Post-mortem Appearances.

A partial post-mortem dissection was made by Prof. F. G. Parsons after the specimen had been hardened in formalin. A complete dissection of the hearts and great vessels was not carried out, as it was intended to keep the specimen as intact as possible for museum purposes.

The thorax contained two pleural cavities and one pericardial cavity. The right lung of one twin and the left lung of the other lay in the same pleural cavity; the lungs were not fused. The two hearts were fused, and lay in a common pericardial cavity. The external appearance of the hearts suggested that they were two normal hearts joined together. A window was cut in the fused cardiac mass, which showed that the wall of the left ventricle of one twin was fused with the wall of the right ventricle of the other, but that there was no communication between them. Beneath the diaphragm, which was continuous across the plane of fusion, there was a single large common peritoneal cavity. The livers were fused, but there were sulci indicating the line of fusion. Each liver had its own gall-bladder and bile-ducts. Each twin had a stomach (Fig. 3), which passed into a short narrow duodenum, into which the common bile-duct of its own liver entered. The two duodenums then joined together in the midline of the plane of fusion, and a common proximal loop of small bowel, with a mesentery, proceeded from the point of junction and lay in loops in the upper part of the common peritoneal cavity. At a point rather above the mid-point of the small bowel, marked by a small blind diverticulum, the intestine divided again; each lower loop of small intestine passed to its own cæcum, colon, and rectum. All the parts of the small and large bowel, with the exception of the duodenum, had mesenteries, and were freely mobile, lying partially in each half of the common peritoneal cavity. There was no fusion of the bladders, and no other abnormalities were observed.

Prof. Parsons points out that the condition of the intestines may be explained developmentally by the fusion of the proximal limbs of the two umbilical loops, the other segments of the intestine remaining separate. This common loop of intestine alone would have rendered impossible the operative separation of the twins, had this been contemplated.

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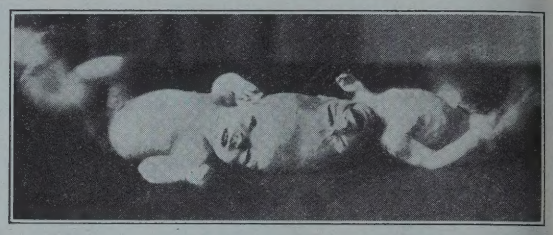
II.—A CRANIOPAGUS.

BY H. C. CAMERON, M.D. CAMB., F.R.C.P. LOND.,
PHYSICIAN IN CHARGE OF THE DEPARTMENT FOR DISEASES OF CHILDREN, GUY'S HOSPITAL.

THE craniopagous monster was admitted to Guy's Hospital on Dec. 14th, 1927, four days after delivery. The external appearance, reproduced in the photographs, was that of two complete females joined together by the whole extent of the vertex of the skull. The infant referred to throughout as No. 1 was somewhat larger than that referred to as No. 2, had a better colour, and was generally stronger and more active. No. 2 had a left-sided facial paralysis. Both took food well, but No. 2 steadily deteriorated during the six days passed in hospital, growing daily more feeble and suffering for the last two days from diarrhœa. The condition of No. 1 remained good throughout.

FIG. 1.



Photograph of the craniopagous twins during life

We were informed that No. 1 had been born first a breech presentation, the breech of No. 2 being the last part to be delivered.

The pulse-rate in No. 1 was on the average five beats per minute faster than in No. 2. No difference in the temperature and rate of respiration could be noted. Blood counts showed little difference from each other and no abnormality. The infants acted quite independently. At times one would cry, flushing and moving restlessly with bulging fontanelle, while the other slept quietly with a fontanelle quite unchanged. Urine and fæces were passed independently, and vomiting took place at different times in each. The stimulus applied to one produced movement and reaction without disturbing the other. Indigo carmine, 3 c.cm., was injected into the buttock of No. 1 and the dye was found freely in the urine in one and a half hours. In much less amount it appeared in the urine of No. 2 after five and a half hours. The long axis of the infants was not on the same plane, with the result that it was by no means easy to arrange that each lay comfortably. If one lay flat on the surface of the mattress, it was necessary to incline the support slightly for the other in order to attain a position which was not resented.

Since the infants continued to live and No. 2 appeared even to thrive I very reluctantly advised an

FIG. 2.

Lateral view of the fused vertexes.

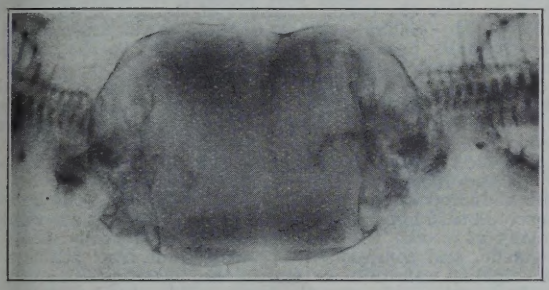
attempt at separation. It was evident from the behaviour of the infants and from the test with indigo carmine that the circulation was continuous only to a slight extent. There was, no doubt, some superficial cutaneous anastomosis, and it was to be expected that the superior longitudinal sinuses were in communication.

Some years ago I had the experience of watching an infant who, on the tenth day of life, suffered from embolic occlusion of the femoral artery of the right leg. A complete line of demarcation formed within a few days, and the infant shed the gangrenous limb with extreme rapidity. On the seventh day after the accident Mr. L. Bromley completed the removal of the limb which had almost completely separated itself. The constitutional disturbance was so slight that the infant actually gained several ounces in weight

allowing for the weight of the amputated limb, during the week in which the separation took place.

With this experience in mind, I thought that it was just possible that the removal of the smaller infant, whose life was already in great danger, might not necessarily entail the death of the larger, provided always that the dura mater in each child was complete, and the subdural spaces separate. During removal of No. 2 it was clear that No. 1 would require no anæsthetic and would lose only minimal amounts of blood if the line of separation was made well to the farther side of the actual line of junction. I thought it possible that if No. 1 survived that any still adhering portions of No. 2 might be shed by the formation of a line of demarcation, and that later some plastic operation might be performed to minimise the resulting deformity. On Dec. 22nd Mr. Bromley was good enough to consent to make the attempt. As a preliminary, blood was withdrawn from No. 2 by Mr. F. N. Reynolds, who kindly attended for the purpose, and stood ready if need had been to transfuse the

FIG. 3.



Radiogram of craniopagus.

infant No. 1. Mr. Bromley then rapidly attempted the removal of infant No. 2, which was anæsthetised by Dr. Eric Scott. During the whole of the early stages of the operation the infant No. 1 rested peacefully, had a good colour, and showed no sign of pain or disturbance, from the active removal of No. 2 which was proceeding. At the point, however, when the subdural space of infant No. 2 was opened the pulse of No. 1 suddenly failed and death was instantaneous. The reason at the same time became apparent. There was a common subarachnoid space, with great deficiency in the development of the dura, and the cerebro-spinal fluid was in free communication, so that the fall in pressure was instantly communicated to that of No. 1.

On post-mortem inspection it was clear that the folds of dura mater were completely developed on the left side of No. 1 and the right side of No. 2, and that the falx cerebri in each case was well-formed. On the right side of No. 1 and the left side of No. 2 the dura mater was defective, so that the corresponding hemispheres of the two infants were only separated by pia mater. The superior longitudinal sinuses communicated about one inch in front of each circular herophili by a wide sinus. The weight of infant No. 1 after death was 4 lb. 9½ oz., of infant No. 2 2 lb. 12½ oz. The length of infant No. 1 was 18¾ in., of No. 2 17 in. The weight of the combined infants at birth had been 8 lb. 4 oz.

In studying these two cases of conjoined twin monsters the most striking feature is the community of the pleural, pericardial, and peritoneal cavities in the thoracopagus and of the intradural space in the craniopagus, a fusion which renders attempts at separation useless.

RECORDER'S SALARY FOR A HOSPITAL.—Mr. R. H. Vernon Wragge, Recorder of Pontefract, announces that he intends to bequeath the whole of the salary he has received, or will in the future receive, as Recorder to the Pontefract Infirmary. Mr. Wragge has held the position for 23 years and the total amounts at present to about £1000.

LEUCOCYTIC CHANGES RESULTING FROM THE TREATMENT OF PERNICIOUS ANÆMIA WITH LIVER.

BY L. E. H. WHITBY, M.D. CAMB., M.R.C.P. LOND.,
ASSISTANT PATHOLOGIST, MIDDLESEX HOSPITAL.

IN observing and recording dramatic alterations in the blood of a case of pernicious anæmia under liver treatment it is not surprising that attention should concentrate on the red cells and hæmoglobin, for these two factors are the essential features of the disease. Nevertheless, liver treatment appears to have a definite effect also on the leucopenia of pernicious anæmia and to produce transient but obvious changes in the differential count.

Four cases only are recorded here, but what might have been an individual reaction in the first and most striking case seems to be quite usual in view of the similar though less marked results in three further consecutive cases. The common leucocytic blood picture in pernicious anæmia is a leucopenia with a relative lymphocytosis, a picture common to many chronic intoxications. Adequate liver diet appears to stimulate the production of leucocytes so that the leucopenia is abolished. In two of the cases here described the relative lymphocytosis disappeared and the differential count became normal except for a transient but definite eosinophilia. Eosinophilia was found in all four cases; it was so marked in the first case, rising to 26 per cent. after 11 weeks' treatment, that the same feature was carefully searched for in the other three, and though never reaching so high a figure was always present to the extent of a few points above the somewhat generous maximum normal figure of 5 per cent. The eosinophilia seems

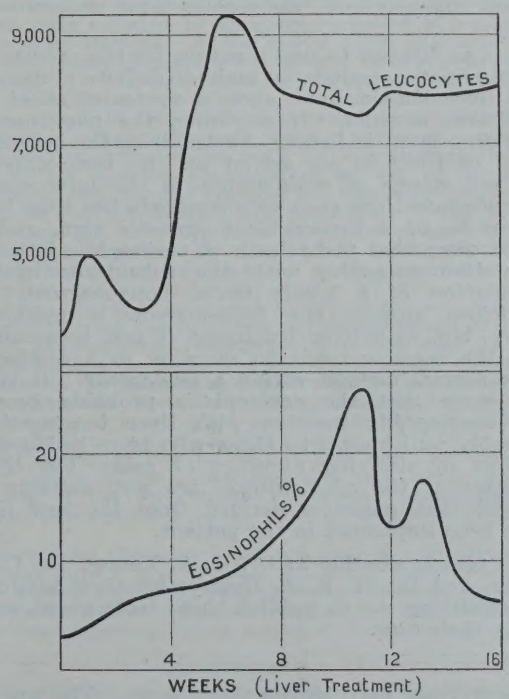


Chart showing alterations in leucocyte count in Case 1.

to be a part of the patient's reaction to the treatment, and the transient nature of the phenomenon points to a parallel between the reticulocyte reaction and the increase in eosinophils. The appearance of reticulocytes in the blood is the earliest favourable indication as to the prospect of a good result; the eosinophilia appears after the reticulocytes have gone and when

the patient is well on the way to having a normal blood count. It is conceivable, therefore, that eosinophilia will be found to be another favourable prognostic sign, and in support of this suggestion it may be stated that all the present four cases have done well with liver treatment.

The following extracts from the blood count records of the four cases show the essential features commented on above, expressed in relation to the time interval after beginning liver treatment. The red cell count in all the cases was greater than 4 million by the time the eosinophilia exceeded 5 per cent.

CASE 1 (see chart).—Treated with 4 oz. raw liver per diem given as a cocktail in orange juice. Eosinophilia 7 per cent. after five weeks' treatment, rose to 26 per cent. in 11 weeks, and subsided slowly to 5 per cent. in 15 weeks. Leucocytes rose to normal figure. Relative lymphocytosis not greatly affected.

Blood Count after Commencing Liver Treatment.

	CASE 2.			CASE 3.		CASE 4.	
Time in weeks:—	0	5	8	0	10	0	7
Total leucocytes..	4,800	11,200	13,200	6,000	6,000	3,200	5,100
Polymorpho-nuclears (%).	64	69	64	51	68	47·5	44
Lymphocytes (%)	32	24·5	26	41·5	23	49	40
Eosinophils (%)..	1·5	0·5	8	0·5	6	1	7

CASE 2.—Treated with 6 oz. cooked liver per diem. Mild leucocytosis with disappearance of relative lymphocytosis within five weeks. Eosinophilia 8 per cent. in eight weeks.

CASE 3.—Treated with 4 oz. raw liver per diem given as sandwiches. No effect on total leucocytes within ten weeks but relative lymphocytosis disappeared. Eosinophilia 6 per cent. in ten weeks.

CASE 4.—Treated with 3 oz. cooked liver and 3 oz. raw liver per diem. Total leucocytes increased. No effect on relative lymphocytosis. Eosinophilia 7 per cent. in seven weeks.

It is as difficult to find a reason for the occurrence of eosinophilia as it is to make a definite statement why liver should have such a profound effect on pernicious anæmia. If anything, the phenomenon is another point in favour of attributing the beneficial effect of liver to its action on the bone-marrow. The occurrence of eosinophilia in the later stages of acute infections such as pneumonia has long been known to be a favourable prognostic sign, and it would seem that the release of eosinophils into the circulation coincides with the subsidence in the stimulation of a highly taxed bone-marrow. In pernicious anæmia the bone-marrow is markedly active, but with liver treatment it can be assumed that the marrow tends to function in a distinctly more normal fashion within a few weeks. It is at this stage that the eosinophilia probably occurs. The eosinophilic reaction with liver treatment is probably well known to those who have had opportunities of studying numbers of cases, but those unaware of the phenomenon are not unlikely to suspect that parasites derived from the raw liver have been implanted in the patient.

My thanks are due to Dr. R. A. Young, Dr. C. E. Lakin, and Dr. H. E. A. Boldero for their kindness in permitting me to publish these facts about cases under their care.

HOSPITALS AND MOTOR ACCIDENTS.—The annual report of Manchester Royal Infirmary states that the average daily number of casualty cases in 1920 was 50. It is now 80, chiefly road accidents. This means, the report points out, that a casualty case is brought in every 18 minutes throughout the day and night.—The chairman of the Hounslow Hospital of 47 beds states that the heavy traffic on the Great West Road has compelled the setting up of a casualty service quite outside its normal function as a local institution. Last year 80 motor accident cases occupied beds for 1680 days, and only £74 10*s.* was received on account of them.

Clinical and Laboratory Notes.

A CASE OF TETANUS.

BY S. BERMAN, M.B. LOND., M.R.C.S. ENG.,
MEDICAL OFFICER, FULHAM HOSPITAL.

THE following case of tetanus seems to be worthy o record, not only because of the comparative rarit of the disease in civilian practice, but also on accoun of the unusual route of infection, the isolation of th bacillus, usually so difficult to cultivate, and th course and result of treatment by antitetanic serun only.

The patient, a boy of 10, was admitted to the Fulhan Hospital on Sept. 10th, 1927, with the following history Twelve days previously, while playing with other children i a public park, one of them poured some lemonade into hi left ear—he strenuously denies that anything except thi lemonade was put in—and the same evening he complaine of pain in the ear; the next day this became more sever and he "felt a lump in the ear"; this was soon followe by a discharge of pus from the left meatus, which continued Six days after the commencement of the ear trouble—i.e. on Sept. 6th—a slight stiffness of the jaw was first noticed this gradually became worse and extended to the cervica and dorsal muscles.

Condition on Admission.—He lay stiff and rigid on the bed his teeth clenched, palpebral apertures narrowed, the angle of the mouth drawn down, giving the typical "risu sardonicus." His head was markedly retracted and th back arched; his upper limbs held stiff and slightly abducte at the shoulders, the elbows semiflexed; the lower limb were abducted at the hips and slightly flexed at the knees One could turn him bodily from side to side just as one woul a plank of wood. He was clear and alert mentally, had n headache, and complained of nothing but his "stiffness. This rigidity was most marked in the masseters—one coul barely insert a thin spatula between his clenched teeth— and in the muscles of the neck and back, where the rigidit could not be overcome at all. In the limbs the stiffness wa most marked in the proximal joints and was not absolute There was a frank discharge of rather foul-smelling pus fro the left meatus which, on examination, showed a norma tympanic membrane but granulations and debris on th posterior meatal wall. All the tendon reflexes were bris and the plantar reflex was flexor. The pupils were equa and reacted well to light and accommodation. The cardia and respiratory systems were normal. There were definit taches cérébrales. Temp. 98° F., pulse-rate 100, and respira tions 24. A careful search revealed no abrasion or woun on the body.

The case was obviously one of severe tetanus, and was decided to institute intensive treatment with antitetan serum by the intrathecal and subcutaneous routes. Th was commenced on Sept. 12th. Under general anæsthes 25 c.cm. of cerebro-spinal fluid, which was quite norma both macroscopically and on detailed examination, wer withdrawn by lumbar puncture and 20,000 units antitetan serum were injected intrathecally; at the same tim 10,000 units were given subcutaneously. The temperatur which had hitherto been normal, rose to 102·2° abou 12 hours after the injection, but dropped to normal agai within four hours. A similar but less marked pyrexia transient duration occurred after each further intrathec injection; otherwise the temperature was normal throug out the illness. The rigidity remained as before, but th patient was comparatively comfortable, swallowed fluid easily, and slept well. On Sept. 13th it was noticed th just before waking from a sleep there were some clon twitchings of the limbs, which were also more rigid ther this lasted for a few minutes only. A second lumbar punctu was performed that day, and the pathologist's report on th cerebro-spinal fluid was as follows: "Turbid fluid wit flocculent deposit. Excess of polymorph cells, 250 per c.cr Albumin: 0·36 per cent. Aufrecht. Globulin presen Dextrose completely absent. pH, 9·5. A film preparatio revealed the presence of Gram-negative intra- and extr cellular diplococci; the fluid was sterile on repeate cultivation." This demonstrates the "meningitic" reactio following intrathecal serum injection; one cannot accoun for the presence of the cocci in the film; they were seen the third specimen examined, but then disappeared com pletely; repeated specimens were constantly sterile energetic cultivation. The patient was given a furth 20,000 units of serum intrathecally and 8000 units subc taneously, and this was again repeated on the following da By Sept. 15th he had received a total of 94,000 units of seru and a slight but definite improvement was noted, especial

n the rigidity of the limbs and back; on this day he was given 8000 units subcutaneously only. He developed a well-marked facial herpes at this time. The following day there were further clonic spasms of the limbs, if anything slightly more severe than previously, and he was given a fourth intrathecal injection of 20,000 units and 8000 subcutaneously. There was a marked improvement from then on, and the patient only received a further 8000 units subcutaneously, making a total of 130,000 units in all.

The bacteriologist's report on a specimen of the pus from the meatal discharge revealed the presence of tetanus bacilli after several days' incubation; they were associated with other sporing anaerobes. The meatitis rapidly cleared up under local treatment. The report on a final examination of the cerebro-spinal fluid on Oct. 5th was as follows: "No absolute increase in cells, but relatively lymphocytes appear in excess. Albumin 0·17 per cent. Globulin present. Dextrose, a trace. Chlorides, 0·7 per cent. Sterile on film and culture. The excess in protein probably a residual effect of earlier reaction."

Apart from a slight stiffness in the legs when first up, the patient made an uneventful recovery and was discharged completely cured.

I have to thank Dr. C. Thackray Parsons, the medical superintendent, for his invaluable aid and for permission to publish this case.

A CASE OF BORAX POISONING.

By John Birch, M.R.C.S. Eng.,
LUTON.

THE following is an account of the fatal case of borax poisoning in a newborn child, to which reference was made in THE LANCET of Feb. 4th, p. 255:—

Clinical History.

I attended the mother for her confinement on Jan. 1st. The child was born an hour before my arrival and appeared normal except than an icterus developed—commonly ascribed to late ligation of the cord—which faded as the days passed. My visits ceased on Jan. 12th, but I was summoned on Sunday evening, Jan. 15th, by a message from the nurse stating that the child was dying.

On arrival I found the child had wasted extremely in the three days which had passed since my previous visit, though regularly fed. He was unconscious and the eyelids were closed. The thighs were flexed close to the abdomen; the legs flexed on the thighs. The arms were pressed to the trunk and the forearms fully flexed on the arms so that each closed hand was pressed to the side of the head just below and touching the ears. The heart beats were normal and the rectal temperature subnormal. The respiration was occasionally jerky—a fact noted by the mother also. The finger-nails and terminal phalanges of the left hand were coloured a bright red or pink, as if painted. The forefinger was red and swollen as far as the wrist. The right hand was normal but the mother stated that the previous day that too was red but the redness had disappeared during the night. The whole of the scrotum, a ring round the anus, and both lips had a similar red appearance, a spot as visible at the external angle of right eye. I found that at least 2 oz. of borax and honey had been given "to prevent thrush"—there was not any thrush.

The colon was immediately washed out with warm water; the washings contained a substance having the appearance of cooked spinach, and the last of them brought away about 3 or 4 inches of what appeared like a mucous cast of the bowel stained green. On Tuesday and Wednesday the child appeared to be reviving and took milk but died suddenly on Wednesday night.

Post-mortem Findings.—The brain appeared normal; pale; ventricles empty; heart empty; bladder empty; intestines almost empty; pylorus normal; duodenum extremely thin walls; liver normal; kidneys very dark, swollen; punctate hæmorrhages under capsule which stripped easily. Lungs normal and expanded. The arterial blood had a pink appearance similar to that seen in carbon monoxide poisoning; post-mortem staining, pink. The stomach contained about 1 oz. of a yellow opaque material having the appearance and consistence of moderately thin honey.

The public seems in general to be unaware that borax is poisonous. For some time I have been in the habit of advising my patients against its use, and in my opinion the two preparations, glycerinum boracis and mel boracis, should find no place in the British Pharmacopœia in their present form.

A NOTE ON NIGHT TERRORS.

By J. W. Shackle, M.A. Camb., M.R.C.S. Eng.,
MEDICAL ASSISTANT, GUY'S HOSPITAL.

NIGHT terrors are often confused with dreams and nightmares, for their outward manifestations are similar. The confusion may arise because writers on this subject have to rely on evidence furnished by a child—as yet unable to express itself and anxious to forget (actively if not passively) an agonising experience—or by a pair of harassed parents. It may therefore be worth while to give a subjective account of night terrors and nightmares, vividly remembered from childhood, which suggests that there is a very sharp dividing line between the two conditions. Briefly stated, the chief distinctions between them were that a nightmare might occur on any night, but especially after excitement or digestive disturbance, and might be repeated several times in the same night, giving no warning of its approach; definite visual images were seen. The night terrors, on the other hand, presented no visual images, occurred only once in the same night, and always gave warning of their approach. Their features were more or less constant, and those from which I suffered had the following character.

On going to bed after a perfectly normal day I usually slept soundly, but occasionally, without any apparent exciting cause, I would be conscious of a feeling of malaise. A small night-light was left burning, and, by the dim light of this, objects normally familiar took on a peculiar aspect. This is best described by saying that they looked larger than usual and possessed an uncanny hardness and what the photographer would call "contrastiness" of appearance; Meryon's famous etching of the Morgue has exactly the grimness and intensity of black and white contrast that was characteristic of the aura of the night terror. In keeping with this the pattern of the wallpaper stood up with peculiar unnatural hardness. There frequently appeared, just before the onset of the terror itself, a phenomenon which I have since come to recognise as a type of fortification figure; it was often replaced by an image consisting of black and white cross-hatching. At the end of about half an hour's continuous aura the night terror followed without perceptible interval. All consciousness of surrounding objects was lost and an image appeared which was peculiar to the night terror. Vague ill-defined masses were seen, some enormously large and others excessively small, conveying a general impression of prodigious contrast. The sensation experienced can be but inadequately described as fear of the most paralysing and dreadful kind, no fear experienced in nightmares or real life bearing any relation to it whatsoever. How long this lasted there is no means of gauging; it seemed an eternity. At the end I awoke exhausted. Objects in the room now had their normal appearance, but my nerve was always greatly shaken by the occurrence, and I had always to be reassured. My mother soon came to understand what had happened and always turned over the pillow, and this action, together with the cool fresh surface, always soothed me to sleep at once. The attack was never repeated in the same night, and attacks mercifully occurred at rare intervals. The aura preceding each attack was so well marked that I never failed to recognise it, and, realising what was about to happen, used to strive to keep "awake," if the expression can be used in this case, and thereby stave off an attack. This succeeded only once, on the occasion of the last attack experienced, when, after a normal aura, nothing further followed, to my unspeakable relief.

Apart from the aura I did not have a true attack of migraine until I was 13 years old, when there were two, after which I remained free until the age of nearly 30, when fortification figures were seen unassociated with headache, on several occasions during a spell of hard reading.

Ætiology.

The number of causes suggested by many writers indicates that the condition is not clearly understood. Among those mentioned are rheumatism, anæmia, tubercle, adenoids, and "gouty gastritis," whilst some authorities suggest that there is usually a family history of neurosis, epilepsy, or migraine. None of these factors, except the last, apply in the case described, but it seems possible that the attacks are the expression of a form of migraine, the aura and visual images affording evidence in favour of this

view. Somnambulism is regarded by some writers as an associated disorder ; but the two solitary occasions on which I walked in my sleep did not coincide with night terrors and were not associated with night terror phenomena.

Most writers seem to agree that there is no recollection of a true night terror, but it is highly probable that the cases they cite are pure nightmare, as indeed their descriptions suggest. An aura occurring during consciousness is not likely to be forgotten, even if the night terror itself were not remembered. The nightmare due to stifling by the pillow is definitely different and has also been experienced by the writer ; adenoids seem more likely to cause this than a night terror.

H. C. Cameron regards night terrors as due to a form of acidosis, and claims to be able to cure them by the administration of glucose. Cyclical vomiting and the allied disorder migraine may be associated with slight acidosis, and the success of this treatment would in that case support the view that migraine may be an ætiological, or at least a related, factor. As, however, most children with night terrors have long periods of freedom, treatment of any kind is likely, apart from suggestion, to meet with apparent success, and the fact that only one attack occurs in a night seems definitely against the suggestion that acidosis bears any relation to the disorder. In fact each attack seems to be a little "brainstorm" on its own, and once it is over nothing further remains to mark its passage. What trigger fires it off in the first place we have yet to discover.

Conclusions.

1. Night terrors are well-defined phenomena bearing no relationship or resemblance to nightmares. 2. They may be preceded by a definite aura resembling migraine. 3. The visual images of a night terror never take the form of objects seen in real life. 4. There is definite recollection on waking. 5. The sensation that predominates is one of overwhelming fear that is out of all proportion to the apparent significance of the stimulus. 6. The terror never recurs in the same night. 7. These observations are compatible with the suggestion made in Garrod, Batten, and Thursfield's "Diseases of Children" that migraine may be a related factor.

I am indebted to Dr. R. D. Gillespie for valuable suggestions.

Medical Societies.

NOTTINGHAM MEDICO-CHIRURGICAL SOCIETY.

A MEETING of this Society was held on Feb. 1st, Dr. W. T. ROWE being in the chair, when Dr. JOHN FREEMAN read the following paper upon the

PATHOLOGICAL MECHANISM OF THE ASTHMA SYNDROME.

"Asthma syndrome" signifies here that family of diseases or disabilities of which asthma is such a conspicuous example. It will be convenient to have this list before us at the outset.

Bronchi and bronchioles	Asthma itself.
Air passages ..	Paroxysmal or vasomotor rhinitis ; hay-fever is perhaps the best example, and, indeed, serves as a type for the whole syndrome for purposes of experiment.
Gut..	Food idiosyncrasies– e.g., egg or fish sensitiveness.
Skin	Urticaria, eczema, ichthyosis ; also mixtures of, and intermediate stages between, any of these three.
Subcutaneous	Angioneurotic œdema.
Kidneys.. ..	Functional albuminuria.
Joints	Paroxysmal hydrarthrosis.
Brain	Migraine and epilepsy.

There are almost certainly other symptoms, and I would like to put in tentatively :—

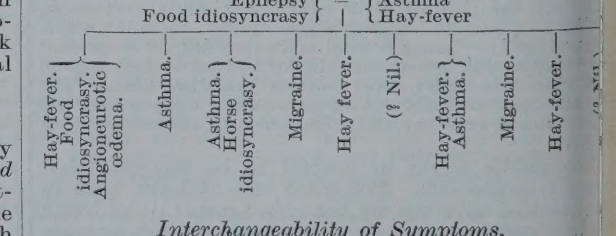
Skin	Dermographia ; this is clearly connected with our group by heredity.
Gut..	Paroxysmal colitis.
Lymphatic ..	White leg.

Now in looking at such a list one notices that some, at any rate, of these items are mere symptoms (urticaria and migraine, for example). I suggest that *all* these conditions are, or may be, symptoms of a particular abnormality, disorder, or kink in the immunological mechanism. It is true, of course, that the whole question can be surveyed from other standpoints : the psychologists, for example, make enormous claims ; the metabolists have their own point of view ; and the laryngologist thinks laryngologically about rhinitis, for example. If you ask an immunologist to talk he will state the pathological mechanism in terms of immunology.

Immunological Specificity.

This immunological disorder is a kind of hereditary and most capricious "anaphylaxy." The *specified* people who have it have in consequence blood circulating in their veins which, when mixed with some *specified* but quite innocuous substance, will make with it a poison mixture. This poison mixture promotes œdema or urticaria (by a very complicated mechanism), it may cause non-striated muscle to contract, and it promotes mucous discharge. It is these various reactions which build up the various items in the syndrome. Note that specified people react to specified foreign substances. This extreme specificity is a well-marked feature of immunological phenomena. An example will make this plain. A hay-fever patient is a man apart ; a normal man can put into his own vein 100 times the dose of pollen which lays any hay-fever patient flat on the floor ; it will circulate round, producing no symptom whatever, the effect on him will be no greater than, say, the effect on a crocodile of 1000 times the human lethal dose of tetanus toxin. If at midsummer the normal man goes into sunny meadows during the week-end he will return on Monday morning feeling all the better for the outing, but he will have so much grass pollen circulating in his veins that a drop of his serum will set up a marked urticarial reaction when injected into the skin of the hay-fever patient. Or conversely, the injection of hay-fever serum into the skin of our week-ender will provoke the Prausnitz reaction which I shall mention later. Then, again, the grass pollen is specific ; no other substance will bring on an attack of hay-fever in a hay-fever subject, though, as we shall see, he may have several other sensitisations going on at the same time. Pollen is the one substance which will make, with his serum, a poison mixture.

The underlying immunological disease is hereditary ; indeed, it is doubtful if it can be acquired in any other way ; but it is handed down not as hay-fever, asthma, epilepsy, &c., but as a tendency to an immunological kink which may give rise to any of these symptoms. It is true that sometimes one particular disability– e.g., hay-fever—tends to run in a family, but far more frequently the type of symptom varies from individual to individual ; for example, an asthmatic father may have a child with bad migraine, who, in turn, may have children showing angioneurotic œdema, hay-fever, and so forth. Evidence of this can be multiplied to any extent, but one example will serve.



Interchangeability of Symptoms.

If our thesis is true, and these various manifestations are symptoms of some underlying lifelo

ondition, we shall expect to find that they are orrelated; they will alternate, or synchronise, or nerge into one another, &c. This is exactly what appens. The life-history of an asthmatic patient requently starts with food difficulties—e.g., diffi-ulties of weaning, &c.; and special food idio-yncrasies may be accentuated to almost any extent nd may persist through life. Often, however, these ade out, and we hear in early school-days of eczema; hen, perhaps, hay-fever through early adult life; nd bronchial asthma in old age. The symptoms may lternate; mothers will say, "I am really glad to ee the eczema coming out, doctor, for I know the oor little thing will not have the terrible head-ches." Or, on asking a patient how the asthma as been this last week, "Oh! I have been having he bumps (i.e., angioneurotic œdema) this week"; nd then perhaps a week later the report will be nettlerash this time, doctor, but now and then have had attacks of asthma too." That these ymptoms synchronise is an everyday experience; rticaria with food idiosyncrasies is almost the rule; nd migraine is extraordinarily common with any of iem. To look at this matter of synchronisation another way, if we are anxious to find the supposed arities, such as ichthyosis, paroxysmal hydrarthrosis, r functional albuminuria, it is only necessary to ook through a biggish asthma clinic (such as the one t St. Mary's Hospital) to find that they are not at ll uncommon, if one knows where to look for them.

Ringing these Changes on Hay-fever.

The artificially produced symptoms give, perhaps, he most striking proof that they all proceed from he immunological abnormality. As usual, hay-ever is our best case for experiment; normally, he pollen lands on the eyes, nose, and throat of the usceptible person, giving rise to the well-known linical entity, hay-fever. This can be reproduced n say, December, by causing our patient to snuff up ollen. If a small quantity of pollen extract is njected into his skin, you will produce an urticaria rrounded by an erythema—the well-known dermal eaction in fact. If the pollen is given in his food or rink he will get abdominal symptoms, sickness, and iarrhœa (it should be noted, however, that it takes large quantity of pollen to produce this reaction). f the pollen extract is injected into the vein (or ubcutaneously for that matter), one is, so to speak, roadcasting the irritant over the whole body of the usceptible person, and varied symptoms follow; here is usually some urticaria in about seven minutes, ith a tingling of the skin; equally common is n attack of angioneurotic œdema, generally in the ace, but it may be in any selected part of the body; hen perhaps migraine; if the patient is at all given o asthma from any cause he will almost certainly et an attack; vomiting and diarrhœa are fairly ommon; and with any really well-marked general eaction one gets albuminuria. (As albuminuria is symptom which has not previously been described, is as well to give details. The albumin is well arked in the urine an hour after the dose, reaches s height at about two hours after, and after this falls apidly, showing the merest trace, or nothing at all, n four hours. I have found it as heavy as 0·2 per cent. n the two-hours specimen: the proportion of albumin o globulin being about 2 to 1—i.e., the proportion ne would expect in a true functional albuminuria.) nce, by an injudiciously large dose of pollen vaccine n my hay-fever clinic, I have produced a fit of pilepsy. Symptoms of rhinorrhœa—i.e., the natural ymptoms of hay-fever—though they occur, are not t all prominent, perhaps because both the patient nd the doctor are distracted by more novel or larming symptoms.

The Prausnitz Reaction.

One may make the disease artificially in the normal an. If the serum of a hay-fever patient is injected nto a normal man's skin this injected area becomes nd remains sensitised to pollen; and a reaction may be produced either by injecting pollen into this area or by injecting pollen into the blood stream and allowing it to be carried to the area. This disease by proxy, the Prausnitz reaction, has about it the elements of a crucial laboratory experiment, and it is worth while to give an example in illustration. If sera are taken from a hay-fever subject, from a horse asthmatic, and from an egg-sensitive subject respectively, and are injected into three several areas of the skin of a normal man we shall have three sensitised patches. Let us allow them all to lie fallow for a day or so and then inject into the vein of the other arm a good dose of pollen. Nothing will happen to the body generally, but where the hay-fever serum has been injected, and there only, will appear a reaction; this will approximate to urticaria or angioneurotic œdema, according as the serum has remained superficial or gone deep. If a day or so later we inject horse substance into the three areas, we should get a reaction only on the area injected with horse serum. Finally, our experimental man, who has been kept off all eggs in his dietary up to this moment, if he is made to drink an egg-flip will find a tingling in the "egg" area after 20 minutes, which will reach its height in urticaria in perhaps an hour and a half, thereafter to fade slowly.

The Localising Factors.

If all these varied symptoms may follow from the immunological kink, why do we sometimes get the lungs affected, sometimes the skin, or the gut, or the brain? Why, again, do the attacks suddenly come on with a run or stop as suddenly; in fact, why do they come on more at one time than another? First with regard to locality. When the irritant arrives in one definite spot—e.g., pollen on the mucous membrane, or food in the bowel—we shall naturally find symptoms arising in that area; they will only become general if the irritant is absorbed into and distributed by the blood. But when the poison is broadcast by the blood why should the symptoms be localised? Or, if you like to put it so, why are certain tissues sensitised and others not by the universally distributed poison mixture? No doubt there are factors here that we know little or nothing about; but very frequently indeed it is possible to discern trauma as a predisposing cause. Angioneurotic œdema is curiously and capriciously localised; no doubt the lips, eyelids, and to a lesser degree the tongue and throat offer special facilities for œdema; in waking hours these parts are always on the move; sometimes, too, there are angioneurotic swellings of the fatigued fingers of typists; and though this is perhaps not "trauma," yet one's mind plays with the idea of histamine. But, putting these particular swellings aside, the remainder seem to arise where there has been damage done, where the skin has been rubbed by the corsets or the braces; one patient described how an angioneurotic attack began at the point where a jagged tooth was scratching the side of his cheek. Eczema notoriously comes on in areas exposed to damage from wind, from washing, or from sweat. Cases of epilepsy which are clearly connected up with these other symptoms are frequently reported as only arising after "the baby was dropped on his head," or "after the old gentleman tumbled down the stairs"—these accidents furnishing the trauma. In migraine it looks very much as if eye-strain was often the localising factor. In angioneurotic and urticarial cases sometimes the patient will only have migraine accompanying these symptoms when there is an œdema of the scalp, suggesting that there is perhaps an œdema occurring on both sides of the skull bone. Lastly, asthma shows frequent traces of trauma, since it is reported so often as only occurring after bronchitis, pneumonia, or having been gassed; up to that time the patient had experienced merely migraine or urticaria.

The Timing Factors.

The timing of the various symptoms depends very largely, of course, upon the arrival of the foreign

irritant. People get hay-fever in June, not in December; they get food sickness 20 minutes after swallowing the specified food; an attack of cat asthma may depend upon the presence of a cat (though the dust of a room in which a cat has been is equally provocative). The commonest time for asthma to commence is in the night, usually on waking—that is to say 6 to 8 A.M.; this is due, no doubt, to the recumbent position and the consequent congestion and collection of secretions. It seems probable that these night asthmas are usually bacterial sensitisations; but the whole question of night asthma needs working over.

Adrenalin or pituitrin will lessen or stop attacks of all the symptoms we have been considering, and will often do it so dramatically as to suggest that the endocrines have been playing a large part in determining the onset or cessation of attacks. If one works through all the endocrine preparations on the market, testing them, for example, on the Prausnitz reaction, only two of them—adrenalin and pituitrin—will check the urticaria, and none of them will hasten or accentuate the reaction.

Nerve reactions and the psychical state of patients play a striking part—in the unphilosophical language of the patient they "cause the attack." Coming into a bright light, changing from hot to cold atmospheres, any smell, "even the smell of my dinner," any excitement, such as watching a dog-fight, hearing of a sudden death, emotional music, may easily precipitate an expected attack. When once an attack has been so caused, then suggestion comes into play. Suggestion, for example, may start an attack of hay-fever by the smelling of an artificial rose, or by the vivid description of a place where an attack has been produced previously. This psychical factor is so important that it is worth accentuating by an example. A lawyer experienced his first attack of urticaria during the extreme annoyance of just missing a railway train, and thereafter always had an attack when giving evidence in the witness-box; his first attack of angioneurotic œdema occurred while watching a particularly harrowing cinema film. No wonder the word "neurotic" gets emphasised in such cases; and yet both the urticaria and the angioneurotic œdema were completely stopped by treating his sensitisation. Naturally the psychologists are not slow to explain the whole syndrome from their point of view; they will claim that there is a specific trauma provocative of hay-fever, another one provocative of asthma, another one of angioneurotic, &c.; and one may grant to them that psychical influences may affect the area selected for attack—e.g., the lungs, skin, gut. So far as a non-psychologist may venture an opinion 100 hay-fever patients are (at any time other than midsummer) just as well balanced mentally as 100 doctors or 100 railway porters. This will seem unconvincing to the Freudian, and I refer him to the Prausnitz reaction. Here you have the trouble arising in the selected area of your experimental man; certainly the psychological apparatus has not been transferred from the original owner of the serum. And to clinch the matter we find that emotion in the experimental man at the moment of the experiment will profoundly affect the result of the reaction. It is convenient at this point to emphasise the fact that no variety of the asthma syndrome is demonstrable in the lower animals.[1] Also it is impossible to produce any variety of the Prausnitz reaction in them by injecting sensitive human serum, together with the appropriate foreign irritant. This failure is so striking as to make one suspect that it is perhaps the psychical factor which is wanting. The whole question needs further work, though it has received much already.

[1] Dr. Freeman mentioned that he had been trying to get positive evidence on this point for the last three or four years, and had uniformly failed, and that if anyone could help with facts they would be much appreciated. It was necessary, of course, to get much more definite evidence than that a dog was frequently sick, a horse had trouble with its breathing, or that an ox repeatedly sneezed or had urticaria.

Dr. Freeman concluded by saying that trauma endocrine secretion, and the psychological state wer important but secondary factors. The underlyin mechanism behind all the varied symptoms unde discussion was the inherited immunological kinl This connected them all just in the same way tha the incapacity to face tubercle bacillus immun logically connected together lupus, phthisis, tube culous cystitis, arthritis, meningitis, and so o In fact, they were all one disease.

MEDICAL WOMEN'S FEDERATION.

AT a meeting of this Association held on Jan. 24t Miss E. BOLTON, the President, in the chair, D SIBYL R. EASTWOOD related the results of an invest gation into the

Gastric Secretion and Other Digestive Factors in Rosace

Dr. Eastwood defined rosacea as essentially chronic congestion of the facial skin, affecting mainl the central two-thirds of the face and leading t permanent vascular dilatation. Papules and pustule eczematous scaling, ocular lesions, hypertrophy of th subcutaneous tissues leading to rhinophyma, thoug seen in varying degrees in the clinical picture, were t be regarded as complications of the underlying vascul condition. The eyes were affected far more frequentl than appeared from the literature on skin disease Since Arlt described a case in 1864, there had bee constant reports of cases in ophthalmological journal and Dr. Eastwood explained this discrepancy fir as due to rosaceal keratitis occurring often in mi forms of facial rosacea, and secondly to the great importance attached by patients to a conditio affecting their eyesight than to their appearanc It was not until the recognition, even now not genera of the relationship between the two that the cas had been freely interchanged between the eye ar skin departments of hospitals.

Dr. Eastwood had been led to rosacea by her intere in the digestive system, and had hoped to obtain series of patients with achlorhydria or extren degrees of hypochlorhydria, as Barber and Ryle ha reported this anomaly of gastric secretion as prese in as many as 7 the 12 rosacea cases examin by them. In a series of over 50 cases of rosace seven of whom had ocular complications, Dr. Eas wood had found that digestive disturbance w present in nearly 90 per cent., that it was almo always "functional" in the sense that no orgar lesion of the gastro-intestinal tract could be demo strated. Fractional test-meals had been given to patients, and 9 per cent. had shown achlorhydr 24·5 per cent. hypochlorhydria, and 15·5 per cen low normal curves, thus agreeing very closely wi Brown's results in a similar series published in 192 These results corresponded closely with those fou in chronic arthritis and chronic cholecystitis by oth observers. Flatulence, constipation, flushing aft meals, and capriciousness in diet had been t commonest symptoms. From the X ray examin tions made in many of these cases, it appeared th some degree of hypotonicity was common, thou by no means universal. Marked dislike of meat h not been correlated with low acid secretion and h occurred equally with high normal and hyp chlorhydria curves—a point of much physiologi interest. Focal sepsis had been found in many cas Dysfunction or disease of the female genital orga had only been found in a few cases and as these h been cervicitis they fell into group of focal sepsis. T majority of the patients had had low systolic blo pressures. Whatever the type of digestive disturban its effective relief had been accompanied by relief the rosacea. Hydrochloric acid in drachm doses wi meals had had an almost magical effect in t patients with low or absent acid secretion, but had also proved useful where no deficiency had be shown. Carbohydrate excess in diet had been fairly constant finding, and its correction a pote factor in successful treatment.

BRIGHTON AND SUSSEX MEDICO-CHIRURGICAL SOCIETY.

AT a meeting of this Society, held on Feb. 2nd, Dr. DONALD HALL, the President, in the chair, a paper was read by Dr. L. A. PARRY on the

Trial of Mary Blandy

for the murder of her father by poisoning with arsenic. Dr. Parry first referred to various earlier cases of murder by poison—the Glenconner case in 1580, that of Henry Robson who poisoned his wife in 1598 by the introduction of arsenic into the vagina, and the Overbury mystery of 1615—and mentioned the inquest on Miles Sindercome who, for high treason, had been condemned to be hanged on the gallows till he be half dead, and then to be cut down and his entrails and bowels taken out, and burnt in his own sight, and who had committed suicide by poison to avoid this dreadful punishment. Sir Richard Napier and Dr. Fern had given very vague, indefinite, and unsatisfactory evidence.

Dr. Parry pointed out that the trial of Mary Blandy was the first case of murder by poison, so far as he could ascertain, in which medical evidence was given to prove the cause of death. The girl had been accused of the murder of her father in order to obtain his money and marry her lover, from whom she had received some powders which she gave to her father. According to her statement she had believed that she was giving him a love philtre to make him like her lover more. The evidence for the prosecution proved that this was not so, that she had deliberately poisoned her father, with full knowledge of her act. The chief medical witness had been Dr. Anthony Addington, the father of the celebrated statesman, Lord Sidmouth. His evidence showed that he had analysed some of the powders sent to Miss Blandy and that they had contained arsenic. But though a post-mortem had been carried out, no attempt had been made to examine the viscera for arsenic. The tests recommended at this time by the celebrated chemist, Dr. Black, of Edinburgh, had been few and not very different from those used at the present time. They had included a modified Reinsch's test. The best and most delicate test known at the present time was the electrolytic, which showed the presence of very minute quantities of the mineral. This test had first been used quantitatively in the trial of the Seddons in 1912. Miss Blandy had been found guilty and executed at Oxford. The method of execution at that time had been different from that of to-day. The criminal, or as was more often the case, the batch of criminals, had been drawn in a cart to the place of execution through a crowd of morbid sight-seers, and then, one after the other, had the halters adjusted. The cart in which they had stood, or the ladder which they had climbed, was removed and they had been left to die of strangulation. This had often taken quite a considerable time. Occasionally the executioner would take pity on the poor victims, and hang on to the legs, thus shortening the death agony. To-day the death factor was not strangulation; the sudden jerk of the fall caused a fracture-dislocation of the cervical vertebræ, and death was instantaneous. The knot of the rope was fitted close to the ear, as in this way it had been found that the dislocation was more certainly caused. The guilt of Mary Blandy had usually been accepted by the many who had written on her case. Dr. Parry mentioned a letter written by her just before her death, and a speech made by her on the scaffold, as was the custom at the time. In both of these she had firmly declared her innocence of any wrongful intent in giving the powders to her father. "All this is true, as I hope for eternal salvation and mercy from Almighty God, in whose most awful and immediate presence I must soon appear." Whatever one's views of a future state, it was admitted by all that the last few hours of life are very solemn ones. It was difficult to understand how Mary Blandy, if she were the wretched parricide pictured at her trial, could have uttered such words a few moments before death. Was she really guilty?

EDINBURGH OBSTETRICAL SOCIETY.

A MEETING of this Society was held on Jan. 11th with Prof. R. W. JOHNSTONE in the chair. A paper was read by Mr. DAVID LEES on

VULVO-VAGINITIS,

in which he analysed the cases which had come under his observation in a period of five years, 1922–27. A total of 146 cases were dealt with and were divided into the following age-groups:—0–1 year, 7·4 per cent.; 1–5 years, 39·2 per cent.; 5–10 years, 44·9 per cent.; 10–15 years, 8·4 per cent. The incidence of vulvo-vaginitis in Edinburgh, said the lecturer, had been augmented by a recent epidemic in a children's institution where it had spread rapidly and proved very contagious. In the great majority of cases (40 per cent.) the source of the infection could not be ascertained; in 13 per cent. of the cases the patients were reported to have been assaulted, but in only a very small proportion was this proved; 15 per cent. of the cases were epidemic in origin, and in 32 per cent. the infection was traced to others in the family. Mr. Lees described the symptoms and signs of the disease and drew attention to the frequency (99 per cent.) of involvement of the urethral canal in acute cases. Every vaginal discharge in children must be looked on with suspicion and treated as if of gonococcal origin, until at least three bacteriological tests had proved negative, under conditions favourable for the detection of the gonococcus. In chronic cases repeated films and cultures were necessary and in resistant cases direct films or cultures must be taken from the cervix. In 73·7 per cent. of the cases gonococci had been found; in 6·6 per cent. gonococci and other organisms, and in 19·7 per cent. secondary organisms only. In acute cases the gonococcus had been demonstrated in over 98 per cent. of cases. The more acute signs of disease disappeared rapidly with treatment, but the parents should always be warned that a long time was required to eradicate the disease and that relapses were apt to occur unless the patient was kept under treatment. Hospital treatment and isolation of the patient from other children was recommended wherever possible.

Treatment.

The chief therapeutic measures recommended were hot antiseptic and alkaline hip-baths and daily lavage of the vagina and urethra. In older children the vagina was dried by swabbing through a speculum and the parts were dusted with dermatol powder; in younger children, when a speculum could not be introduced through the hymen, instillations of an antiseptic dissolved in glycerine were recommended. The antiseptic preparations recommended were ¼–1 per cent. picric acid in glycerine; ¼–1 per cent. silver nitrate in glycerine, and ¼–½ per cent. chloramine-T in glycerine. The instillations were supplemented by the use of small medicated bougies of these and other substances. If it were not possible to irrigate the urethra small urethral bougies, with chloretone added to ease the pain, were inserted daily. Repeated changes of the antiseptic were advised and it was recommended that in every case the vulvar surface should be left as dry as possible by dusting it with a compound dermatol powder. Efficient treatment depended more on the meticulous care with which it was applied than on the medicament used. In every case it was essential:—

(*a*) To establish good drainage from the urethra, vulva, and vagina.

(*b*) To produce a slight hyperæmia of the infected parts by hot hip baths and hot vaginal douches.

(*c*) To use a sterile all-glass catheter, with lateral perforations, so as to spread the antiseptic over the vaginal wall during the douche and prevent the infection being carried to the cervix.

(*d*) To dry the parts subsequent to douching or alternately to instill the vagina with an antiseptic solution in glycerine.
(*e*) To treat the urethra in every case.
(*f*) To examine and treat the rectum if infected.
(*g*) To prevent the child from conveying the infection to others and to its eyes.

Adjuvant methods of treatment were used in both acute and chronic cases, and of these detoxicated and autogenous vaccines proved most serviceable. The child tolerated and responded well to vaccine therapy.

In the series of cases reviewed the following complications arose :—

	Per cent.
Gonococcal infection of the eye	8·3
Infection of the Fallopian tubes and pelvic peritoneum	5·5
Infection of the rectum	2·7
Non-specific ulceration of the vulva	1·8
Acquired syphilis of the vulva	1·8
Cystitis	0·9

No cases of arthritis were met with. Coincident syphilis was met with in 7·5 per cent. of all the cases.

In coming to a diagnosis of cure it was essential to observe cases over long periods, and to examine repeated films during this period of observation. The standard of cure aimed at in every case should be :—

(1) Clinical cure and no sign of clinical relapse after suspending all local treatment. Local treatment must be carried on for at least three weeks after apparent clinical cure.
(2) Bacteriological cure in three successive smears taken at intervals of one week during treatment, and in three subsequent weekly tests taken after suspending treatment.
(3) Clinical and bacteriological tests at intervals of one month over a period of three months subsequent to the attainment of (1) and (2).
(4) If there was any doubt as to the clinical condition or bacteriological reports, administration of a provocative vaccine and a repetition of the tests both by direct film and by culture was indicated.
(5) If there was neither clinical nor bacteriological evidence of disease during a period of three to four months after cessation from all treatment the case might be considered cured.

In trying to attain this standard the following results were obtained in the series of 146 cases reported :—

Average duration of treatment and tests for cure of gonococcal cases in those now completed (87 cases)	7 months
Average duration of treatment and tests for cure of vulvo-vaginitis cases not proved gonococcal (21 cases)	2 ,,
Cases still under treatment, but presumed cured, which have now been under treatment and tests for cure for a period of five months	13 cases
Cases still under active treatment with infection still present	18 ,,
Cases which defaulted while still showing signs of infection	7 ,,

Puerperal Hæmorrhage.

Dr. G. D. KENNEDY then gave clinical notes of three cases of puerperal hæmorrhage. These cases were of interest as the bleeding was very severe in each case and did not occur until after the tenth day of the puerperium, the dates of occurrence being the tenth day, fourteenth day, and sixth week respectively after delivery. No definite cause was found, even after thorough examination under chloroform and curettage. In each case, however, a retroversion was present, which was the more interesting as on dismissal from the maternity hospital in all cases the uterus was anteverted. In no case was there any apparent infection during the puerperium. In two cases the mother was not nursing her baby and therefore the hæmorrhage might have been the return of an early menstruation. Dr. Kennedy thought that as retroversion was common to all it must have something to do with the hæmorrhage. He could, however, find no record anywhere of a simple retroversion in the puerperium causing so severe a hæmorrhage.

WESTERN OPHTHALMIC HOSPITAL.—This hospital, in the Marylebone-road, London, is to be rebuilt. The existing building is said to have been erected by George III. as a country residence for his children. It is in bad condition and extremely crowded and inconvenient. The proposed new building will cost £40,000.

Reviews and Notices of Books.

SAHLI'S CLINICAL METHODS.

Lehrbuch der Klinichen Untersuchungsmethoden für Studierende und praktische Aerzte. Seventh edition. By Prof. H. SAHLI, Director of the University Medical Clinic in Berne. Vol. I., first half. Leipzig and Vienna: Franz Deuticke. 1928. Pp. 496. M.26.

THE new edition of Sahli ends off in the middle of a sentence on p. 496, but that will not prevent the initiated from reading the volume up to that point with the liveliest interest, for the author is no mean stylist and among the greatest living authorities on physical examination. He admits frankly that literary composition is to him an absorbing interest, applying to himself the following words of a popular German novelist: "The reader may smile over it but for us authors writing is a madly exciting business, a voyage in the tiniest boat on the high sea, a lonely flight through infinity"; and although the publisher may suffer—the author mentions "unending corrections" in his manuscript—the reader is blessed in the assurance of knowing exactly what Sahli wishes to tell him. At first sight his book may seem to be the ordinary collection of bedside methods gleaned without critical faculty from all sources, but study will soon discover that Sahli's methods have been worked out largely by himself and his staff at a clinic run on continental lines and visited by graduate students from all parts of Europe and indeed of the world. Subjectivity enough will be found in the present volume, for Sahli expresses a horror at the practice of setting down contradictory views without indication of the writer's bias, for "in medicine," he writes, "pretty much everything is stated which it is possible to state," and such roughage he regards as unsuitable for student diet. The present instalment of the book covers the examination of the patient's general condition, of his skin, the determination of temperature, the behaviour of respiration, and the various methods of investigating the circulatory system. The section on hæmodynamic methods is a monograph in itself. Sahli holds very precise views in regard to the mechanism of the circulation and is prepared to justify them by exact methods of physical examination; in his hands the hæmobolometer has given interesting results. To these we may return when publication is complete, and may content ourselves now with recommending every student and practitioner of medicine who can read German to make acquaintance with physical examination through Sahli's eyes and fingers.

EXPERIMENTAL BIOLOGY.

Factors Affecting the Distribution of Electrolytes, Water, and Gases in the Animal Body. Lectures delivered at Rutgers University under the Luther Laflin Kellogg Foundation. By DONALD D. VAN SLYKE, Ph.D., Sc.D., Member of the Rockefeller Institute for Medical Research. London: J. B. Lippincott Company. 1927. Pp. 6. 10*s.* 6*d.*

THIS monograph deals with factors affecting the distribution of electrolytes, water, and gases in the animal body. The main theme of the work is based upon Prof. L. J. Henderson's conception of blood as a physico-chemical system, and the method of interpreting the reactions of this system is the nomographic method. Types of nomograms used in the work are in the main Cartesian, but some of the results are expressed in the form of d'Ocagne alignment charts. The subject is extremely complicated, and can only be followed by those familiar with this type of work. The volume is of definite value in that it collects under one cover the recent work of D. Van Slyke and his colleagues, and at the same time forms a very valuable extension to Prof. Henderson's investigations.

PHYSIOTHERAPY.

A Practice of Physiotherapy. By C. M. SAMPSON, M.D., Formerly of the Physiotherapy Service, Walter Reed U.S. Army General Hospital, Washington, D.C. London: Henry Kimpton. Pp. 620. 45*s.*

THIS book is the successor to the author's "Physiotherapy Technic," which was published in 1923. Many additions have been made, including a therapeutic index. The author writes most fully on diathermy and high-frequency currents; about one-fifth of the book is devoted to these subjects. Static electricity is fully considered in a chapter of 17 pages, while 60 pages are devoted to ultra-violet light therapy. Other forms of electrotherapy and physiotherapy are briefly considered. Special chapters deal with acute gonorrhœa in the male, peripheral nerve wounds, arthritis, locomotor ataxia, pyorrhœa alveolaris, and hay fever.

The author writes fully on technique and gives detailed descriptions of the methods which he has found most satisfactory. On certain matters his teaching is peculiar. He distinguishes two methods of applying diathermy, one for procuring the stimulating effects of heat, the other for producing sedative effects. The former he recommends for pathological conditions such as non-uniting fractures. He insists that diathermy currents should be delivered from the machines at a higher voltage than that which is customary in many forms of apparatus now constructed because, he says, currents at relatively low voltage produce little heat in the deepest parts of the body. He gives description of an occasion when he was treating the prostate of a medical friend with a high-voltage diathermy machine. The current had reached a value considerably lower than that which produced the maximum bearable heat when low-voltage currents were used, but was sufficiently objectionable to cause the patient to protest with vigour. Dr. Sampson insists on the importance of learning and practising correct technique and the futility of first connecting the patient to the source of energy and then setting the machine in operation.

The book is written throughout in a breezy and colloquial manner. It is scarcely suitable for the beginner, but the more advanced reader will find much that will interest him and still more that will amuse him. Dr. Sampson has had wide practice in most forms of physiotherapy and he writes almost entirely from his own experience.

Physical Treatment in Diseases of the Eye, Ear, Nose and Throat. By ABRAHAM R. HOLLENDER, M.D., Attending Oto-laryngologist, American Hospital of Chicago; and MAURICE H. COTTLE, M.D., Attending Oto-laryngologist, Illinois Masonic Hospital, Chicago. London: J. and A. Churchill. Pp. 307. 21*s.*

Dr. Hollender and Dr. Cottle, who are in charge of the oto-laryngological departments of two large hospitals in Chicago, have acquired considerable experience in the use of physical agents, in the treatment of diseases of the eye, ear, mouth, throat, and nose, and have incorporated their findings in this comprehensive work.

In the first part they explain briefly the meaning of the technical terms used, and the nature and properties of the various agents. The next two parts deal respectively with the treatment of diseases of the eye and ear. The treatment of diseases of the nose and accessory sinuses is then described, and subsequently the diseases of the mouth, pharynx, and larynx are considered. Finally the authors deal with borderline diseases; these include headache, hyperæsthetic rhinitis, seasonal hay fever, asthma, and certain diseases of the eye, ear, and nose, which may have a causal relationship to disturbances of the endocrine system.

Physical agents have been extensively employed in recent years in the treatment of diseases of many regions of the body, but in oto-rhino-laryngology and ophthalmology little attention had hitherto been directed to physiotherapy in spite of the need for more effective methods of treatment. By careful clinical investigations Dr. Hollender and Dr. Cottle have shown the help that may be derived from diathermy, ultra-violet light, the galvanic current, and other physical agents in the treatment of diseases which respond badly to certain therapeutic agents. In early cataract negative galvanism is recommended as well as diathermy, and it is claimed that considerable benefit can be derived. In selected cases of glaucoma the authors state that diathermy and galvanism may prove of inestimable value. They have investigated the effect of diathermy on the normal eye, using tonometers, one eye being subjected to the heat and the other serving as a control. A lowering of tension was demonstarted after an application of diathermy for half an hour.

The authors speak with restraint throughout the book and do not recommend physiotherapy where surgical or medicinal treatment can produce satisfactory results. The volume is well printed and illustrated, and its contents form a valuable contribution to the subjects in which the writers specialise.

ORGANIC INHERITANCE IN MAN.

By F. A. E. CREW. London and Edinburgh: Oliver and Boyd. 1927. With 36 text figures. Pp. 214. 12*s.* 6*d.*

William Withering (1741–1799), to whom, among other things, we owe the introduction of digitalis to the pharmacopœia, was a man of implacable curiosity and industry. It is appropriate that one of like spirit should have been chosen to give the first Withering memorial lectures in the University of Birmingham. Out of them has emerged this excellent book. It is useful, firstly because it gives a particularly clear account of the theory of Mendelian inheritance and the genes on which it may be assumed for the present to depend, and secondly because it is written with special reference to human abnormalities of which more than 50 pedigrees are given. Medical men are situated in a position of peculiar advantage for collecting the further data which are so much needed; we hope they will read the book and become sufficiently interested to help to forward the work it outlines.

AMERICAN ILLUSTRATED MEDICAL DICTIONARY.

Fourteenth edition. By W. A. NEWMAN DORLAND, M.D., F.A.C.S. London and Philadelphia: W. B. Saunders Company. 1927. Pp. 1388. 35*s.*; or with thumb index, 37*s.* 6*d.*

THE fourteenth edition of Dorland does not differ in any essential features from the thirteenth, which was published two years ago, except that the name of Dr. E. C. L. Miller, professor of bacteriology and biochemistry in the Medical College of Virginia, appears on the title-page as collaborator with Colonel Dorland; but we learn from the preface that many definitions have been rewritten in accordance with the latest terminology, and over 2000 new words have been added. Therewith the volume has gained some 44 pages in length although the price remains the same. It would be a forlorn hope to try to find errors of omission or commission in this edition; we take it kindly that each time we have called attention to a missing word the editor has supplied it in the next following issue of the dictionary—thus now, and at length, the reader is properly orientated in the identities of Schwarz, Schwartz, and Schwartze. The only feature that possibly calls for criticism is the selection of line drawings, of which more than a hundred have been added to the present edition. Various kinds of flies and moulds are now illustrated in this way, and these may have some practical value, but we doubt whether a diagram of a gastro-enterostomy, or a photograph of varicose veins of the leg is worth the space allotted. It would be a pity, we think, to turn an admirably complete dictionary into an imperfect encyclopædia. However that may be, we doubt not that Dorland will maintain its popularity.

UNIVERSITY COLLEGE.

Centenary Addresses by the late E. H. STARLING, OLIVER LODGE, R. W. CHAMBERS, J. ROSE BRADFORD, J. A. FLEMING, J. M. COLLIE, G. K. CHESTERTON, J. E. G. DE MONTMORENCY, Bishop TEMPLE, H. A. L. FISHER, GREGORY FOSTER, and MARY BRODERICK. University of London Press. 1927. Pp. 303. 12*s.* 6*d.*

AMONG the other celebrations of the centenary of the foundation of "the accursed Academy in Gower Street" were twelve orations delivered by various distinguished people, some of them surveying the progress of a hundred years in their several branches of knowledge, others commemorating the establishment and maintenance of freedom in teaching and learning. They can be bought separately, but it was a happy idea of Prof. Chambers to bring them together in one volume; in it one may read of most of the aspects under which University College has steadfastly upheld university education in London. It is, perhaps, not quite fair to detach them from the settings in which they were originally delivered, but as they stand in print those of Prof. Chambers and the Provost stand out in the humanities and those of Sir Oliver Lodge and Prof. Fleming in the sciences; Mr. Chesterton is not at his best, and the volume ends with an admirable contribution from Dr. Brodrick on "those hussies."

EXPOSURES OF LONG BONES AND OTHER SURGICAL METHODS.

By ARNOLD K. HENRY, M.B., B.Ch. Dub., F.R.C.S.I. Bristol: John Wright and Sons, Ltd. Pp. 80. 10*s.* 6*d.*

THIS little volume bears in every line the marks of original observation. Whether other surgeons will or will not agree with the methods described is a matter of secondary importance; they are invariably original and suggestive. The book covers a wide range of subjects and includes exposure of the long bones, new methods of exposing the vertebral and subclavian arteries, the excision of the sympathetic ganglion for angina, and an entirely new technique for reaching the pituitary gland. It thus compresses into small compass a large amount of useful and original observation.

ENCEPHALOGRAMS IN CHILDREN.

Uber Encephalographie im Kindesalter. By Dr. TH. BREHME, Assistant, Heidelberg University Children's Clinic. Berlin: S. Karger. Pp. 50. M. 4.20.

THIS monograph is an important addition to the literature on the subject of encephalography. Of the three possible routes of air injection into the brain cavities (ventricle puncture, suboccipital puncture, and lumbar puncture) the author has confined his attentions to lumbar puncture, and by carrying out the procedure in 45 children has shown that it is a safe and successful method. He found that the after-effects were slight and transient; temporary headache was the rule, but there were no instances of collapse or severe symptoms. An anæsthetic was rarely necessary; his technique is simple. The 45 radiograms which he publishes show that the ventricles can be perfectly outlined by this method and that valuable indications may result therefrom. Surgeons in this country appear to favour direct ventricular puncture owing to the certainty and to the information which may be gained from the actual operation, especially in internal hydrocephalus. In the latter condition, when due to occlusion by meningitis or tumour, the lumbar method naturally fails to outline the ventricles, but the author claims that failure to outline is, in itself, pathognomonic, since there is no record of failure to demonstrate the ventricles in normal cases by his method.

We commend the monograph to the attention of neurologists, and to radiologists interested in the interpretation of encephalograms. The X ray appearances are sometimes difficult to interpret; sometimes such definite variations from the normal occur that diagnosis is confirmed. The inclusion of normals is helpful. Dr. Brehme has done a valuable piece of straightforward research work, which may well give an impetus to wider investigations along the same line.

TISSUE CULTURE.

Gewebezüchtung. Second edition. By ALBERT FISCHER. Munich: Müller and Steinicke. 1927. Pp. 508. M.37.50.

To all engaged in tissue culture work this book is a mine of information. All aspects of the subject are considered and a really good bibliography is appended. After an introductory and historical chapter the composition of culture media and their preparation are described, and an account given of such work as has been done to investigate the food conditions essential for growth. A useful summary follows. The technique of cultivation is described in detail so clearly that no worker should fail to obtain results if he follows the directions given. The rest of the book treats with the same wealth of detail so far as it is known, the physiology of growth in vitro, the minute anatomy of the cell, the cultivation of different tissue cells outside the body and their behaviour under artificial conditions, and many experiments which have been made to elucidate the problems of pathology and immunity, and neoplastic growth. We have not found elsewhere so much information upon tissue culture collected together in one volume.

JOSEPHINE BUTLER.

Her Work and Principles and their Meaning for the Twentieth Century. By Dame MILLICENT FAWCETT. London: Association for Moral and Social Hygiene. 1928. Pp. 164. Cloth, 2*s.* 6*d.* paper, 1*s.* 6*d.*

IN Parts I. and II. of the League of Nation's Experts' Report on the Traffic in Women and Children, the campaign associated with the name of Josephine Butler is briefly referred to, but as she died over 20 years ago it is possible that to many her name is the only knowledge which they possess of her. Yet she was for a period one of the most talked about women in England, while she laid the foundation for social reforms upon which, and none too soon, beneficial changes have been erected. Dame Millicent Fawcett's book is published in recognition of the centenary of Josephine Butler's birth. It sets out her family life sufficiently to show the influence of early years upon her in originating and confirming her religious impulses and in dowering her with pity and courage. But she was about 40 years of age when her name became prominent. Her husband was holding an educational post in Liverpool and while there she helped to establish homes and refuges for fallen women. This led to her coöperation in the agitation which had just begun for the repeal of the Contagious Diseases Acts, an agitation in which she became the most prominent, the most admired, and the most abused protagonist. She gave evidence before the Royal Commission which was appointed in deference to the strong feelings aroused by the representations of herself and her colleagues, and was energetic in denouncing the traffic in young girls between Belgium and England, and the working of organised prostitution in India. The official documents of the League of Nations have now justified many of the contentions, 40 years old, of Josephine Butler and those who coöperated with her, like James Stansfield, Daniel Cooper and William Stead. Dame Millicent Fawcett closes her book with the quotation: "The seed which she has sown can never die," and there is no doubt that the general arguments that were used formerly in behalf of State recognised prostitution would never be employed to-day, even though there is medical support for certain antivenereal measures, which she might have reprobated. We have here a pious story movingly told

THE LANCET.

LONDON: SATURDAY, FEBRUARY 11, 1928.

THE INTERNATIONAL OFFICE OF HYGIENE.

THE International Sanitary Convention of Paris, 1926, placed a number of important new duties on the Permanent Committee of the International Office of Hygiene, and the steps which that Committee is taking to fulfil those duties are of interest. The Convention lays down agreed lines of principle and international practice in dealing with the prevention of transmission of plague, cholera, yellow fever, typhus, and small-pox at sea and land frontiers. A primary requirement for this purpose is intercommunication of facts and figures regarding the prevalence of these diseases. The methods prescribed to this end in previous conventions, which were cumbrous and often ineffective, are now to be changed, and the new system makes the International Office in Paris the responsible centre for the collection and distribution of the desired information. The problem which has been presented to its committee and director in this matter is, however, none too easy. In certain cases, rapidity of transmission is the first consideration, and all modern means, like cables and wireless, broadcasting, or air mails may have to be called into service, and special codes utilised. On the other hand, the Convention is world-wide in its application, and the mechanical use of these methods to inform every country of every kind of foreign outbreak or epidemic would be futile and extravagant. It has, moreover, to be remembered that the Convention affirms the principle that information as to foreign outbreaks does not carry with it any necessity of action, and that it rests with each country to apply the specified measures according to its own appreciation of the needs of the particular case. Hence information in the form of detailed communiqués regarding the circumstances in which an epidemic disease has appeared, its type, and the action taken, are often of greater ultimate importance than telegrams of notification figures, even though it necessarily arrives more slowly.

A memorandum relating to the work of the last session of the Permanent Committee of the International Office at Paris, which we have obtained from its director, Dr. POTTEVIN, shows that the solution is being sought by a system of utilising "regional" offices from which information in detail can be sent rapidly to the interested countries in the region, and be summarised in code for periodic transmission to the Paris centre. Here the Committee has had ready to its hand a clause in the new Convention which empowers it to make agreements with the League of Nations Health Organisation and similar international health bodies. Great success has attended the system by which the League of Nations, from its office in Geneva, and from its branch office for the Far East at Singapore, now collects official returns regarding infectious diseases from many public health administrations, and publishes them in "Epidemiological Intelligence Bulletins," which are already widely known and used. To avoid duplication, these bulletins are to be recognised as an official means of transmitting information supplied under the International Convention, and will include special communications supplied to the regional bureaux from Paris. For the Americas, a somewhat similar service is already undertaken by the Pan-American Sanitary Bureau at Washington, and the last Pan-American Conference, held at Lima in October, accepted the proposal that it should in future also act for the Paris office under the Convention. Another and equally valuable agreement has been negotiated with the International Quarantine Board at Alexandria, which will work as a regional bureau for countries of the Near East and the Levant—a regional system whose value was demonstrated last year in connexion with the outbreak of cholera in Iraq and Persia. Supplementary arrangements, for example with the Australian Government for collection and codification of information from islands in the Pacific Ocean, are also being considered. The requirement that ships should be regularly overhauled at approved ports, in order to ascertain if they require measures of "deratisation"—the term, in French at least, seems to have become official—entails on the International Office of Hygiene the duty of giving rulings, after consultation between its delegates, on various details where a common practice must be adopted in the interests of shipping. Among these is the form of certificate of "deratisation" or "exemption from deratisation" which will in future have to be included among the ships' papers. A convenient stock form for this purpose, based on the United States model, has been recommended. The Office has also decided to undertake the publication of an annual directory relating to quarantine measures, sanitary equipment of ports, and like matters throughout the world—a volume which promises to be of great convenience to administration and shipping. All this preparatory work will greatly facilitate the smooth working of the new Convention when the formalities of its ratification have been completed and it is in full operation. Allied questions, also considered, were proposals for the official recognition of ships' doctors in quarantine work, the use of wireless to convey messages regarding the health of ships to the next port of call, and the instructions and assistance in medical emergencies which can be furnished to the masters of vessels not carrying a doctor. On the last-named subject, which is now also receiving attention from a special committee of the British Medical Association, the committee of the Paris office is collaborating with the League of Red Cross Societies.

During the same session the Permanent Committee according to the terms of the Geneva Convention of 1925, advised the Health Committee of the League of Nations on the additional narcotics which should be scheduled as drugs of addiction, and decided to deal at an early date with the evidence which is being collected regarding the undesirable use of benzoylmorphine and other morphine esters. The most interesting part of its proceedings, however, were, as usual, the contributions from the different official delegates or rapporteurs on new features of epidemiology or administration in their respective countries, most of which ultimately appear in its monthly publication, the "Bulletin of the Office International d'Hygiène Publique." The reports on the prevention of beri-beri in the Dutch East Indies by means of vitamin extracts, on the antituberculous vaccination of adults in Norway by B.C.G., on changes in Japanese administration against venereal diseases and for the control of medicaments, and on the new insurance system against tuberculosis which is being established in Italy are a few examples of the utility of these periodical conferences. An instructive account was given by Dr. N. M. JOSEPHUS JITTA of the progress

of investigations in Holland into the occurrence of encephalitis after vaccination, a subject on which the Committee will shortly receive further enlightenment from a special associated commission on small-pox and vaccination questions appointed by the League of Nations Health Organisation. The delegate from South Africa referred to recent work establishing the viability of the plague bacillus in the flea, apart from a human host, for as long a period as three or four months, while the British delegate presented the experience of the Liverpool port sanitary authority in gauging the degree to which ships are infested by rats. The facts supplied as to recent cholera extension included the estimate of about 15,000 as the total deaths during its extension to French Indo-China in 1926—a figure which it is claimed would have been very largely increased but for the extensive and organised system of anti-cholera vaccination put in force in the infected areas. The results of the same vaccination, and of ingestion of bilivaccin, in India, and the apparent success of vaccination in preventing the extension of cholera in Persia were also described. The measures taken by the British authorities in Iraq to deal with the outbreaks which began last July in the ports of the Persian Gulf, and the value of the energetic action by which its progress up the twin rivers into the interior was checked, received special attention, as well as the question of the need for new methods of control to cope with the many new lines of communication which have been opened up in these Near Eastern countries. Reference may also be made, in conclusion, to an instructive communication from the Roumanian delegate regarding a widespread outbreak of epidemic poliomyelitis which affected that country during 1926–27, and to the accounts of yellow fever in Africa which are contained in the December number of the Bulletin.

FŒTAL ARCHITECTURE.

WE publish this week an account by Mr. VINCENT PATRICK of a case of thoracopagus which was admitted recently to St. Thomas's Hospital, and one of craniopagus which came a little later under the care of Dr. H. C. CAMERON at Guy's Hospital. Both cases have attracted public attention. From the most ancient times man has been fascinated and attracted by all departures from the usual or the normal, although when they become of frequent occurrence he accepts them as he accepts the rest of his environment. The very derivation of the word monster indicates quite clearly how the Romans regarded the birth of a child which showed any conspicuous abnormality, and the continued use of the word is to be deprecated. The term is entirely unscientific and has never been defined in a satisfactory manner. CHARLES DARWIN defined a monstrosity as some "considerable deviation of structure, generally injurious, or not useful, to the species," but such a definition is too vague to be regarded as acceptable and, indeed, it is time wasted to attempt a definition. It would be better to abandon the use of the term entirely, convenient and occasionally descriptive as it may be, and to refer to the individual cases by their appropriate designations. All such cases are examples of disordered or partially arrested growth, and they are of scientific interest in so far as they provide one avenue of approach to the study of normal growth. The problems which are presented by growth and differentiation are amongst the most difficult that confront the embryologist to-day, but the darkness with which they have been surrounded for so long is gradually being illuminated by experimental work, especially in the fields of embryolog and pathology. Until the processes of normal growt are understood and defined, we cannot hope to solv the allied problems of abnormal growth. It is true as we must all admit, that much has been an can still be learnt with regard to normal growth b the careful study of cases where growth has proceede in an abnormal manner, but the inferences to b drawn from such a study are robbed of much of thei value by our ignorance of normal processes. In th early stages of the development of the fertilise ovum there is apparently a brief period during whic it may be said that a very large number of the cell derived from the original ovum retain all th potentialities of the latter and, when transplante into favourable surroundings, they are capable o producing another embryo. When we consider th processes of abnormal growth, as exemplified by th occurrence of conjoined twins from time to time, w ought not to experience surprise that such a mistak should be possible; but bearing in mind th potentialities of the cells with which we have to dea we ought rather to marvel that Nature departs s rarely from the orderly and regular character of he course. That such is the case is due to the fac that the stage of unlimited potentialities of the cel is closely followed by a stage in which there organisation and control of their further growtl It has been shown for amphibian larvæ that the cel which lie in the dorsal lip of the blastopore exercis an important organising and controlling influence i the earliest stages of differentiation, and it is to the influence that the orderly progress of subsequer developmental changes is to be attributed..

That one group in a living mass of cells shoul exercise a regulating and controlling influence ov a neighbouring group, an influence which may b to some extent reciprocal, has been shown by th work of experimental embryology and tissue cultur Transplantation of the optic vesicle from its norma position to a site under the ectoderm elsewhere i the body has been repeatedly and successfully carrie out. The ectoderm over the transplant develops crystalline lens in the normal way, but no le develops on the side of the head from which the opt vesicle has been removed. Pure cultures of epitheli cells show no tendency to adopt a definite morph logical form until they are brought into contact wit fibroblasts, when they become differentiated into ren tubules, thyroid acini, and so on, corresponding t the source of the epithelium in the first place. It now well recognised that identical twins develo from a single ovum and that the complete cleava which separates the two must occur before an definitive embryonic area or disc can be determine The production of uniovular twins in man may b regarded as one of Nature's successful experiment but at the same time we must remember that what an experiment in man is the general rule in some oth mammals. In one of the armadilloes, for example, th fertilised ovum always gives rise to four separa embryos, which are all of the same sex. But would appear that the time period during which th experiment can be carried out successfully is relative short, and its delayed attempt results in th disastrous failures which are represented in teratolog by a large group of malformations. Experimentall it has been found possible to divide the fertilise amphibian ovum and produce twin embryos up the stage of the completion of the gastrula. Attemp to produce twin embryos experimentally at a lat stage have resulted only in the production of duplic tion of some part or parts of the body. The type

malformation depends in part on the plane and degree of cleavage and in part on the subsequent development of the two conjoined embryos.

Cases of craniopagus, in which both embryos develop normally, represent an attempt at the production of uniovular twins which has all but succeeded. The two are completely separated and perfectly formed, save that the two heads are joined together by their vertices, frontal, or occipital regions as the case may be, the brains being separate and acting independently of one another. Cases of omphalothoracopagus, on the other hand, represent attempts that have been less successful, and there is usually direct continuity of the two hearts, while the pericardial, pleural, and peritoneal cavities are common to both. In the two types, to which reference has been made, both twins develop symmetrically, but asymmetrical development may also occur. Embryologically there is no initial difference between symmetrical and asymmetrical conjoined twins. In the latter variety one embryo continues to develop in the normal way, but the development of the other is retarded and it remains in a more or less diminutive form, a parasite dependent on its autosite for its blood- and nerve-supply. It is a curious law of ontogeny that whereas in the early stages cleavage is the keynote to development and growth, subsequently structures which are situated symmetrically as regards the median plane or long axis of the embryo and which subserve the same functions show a very strong tendency to fuse with one another. The fusion of the two primitive heart tubes is a striking example of this tendency, and it is just possible that in cases of conjoined twins some of the connexions may be of this secondary nature. The relationship between conjoined twins and teratomata, if there be any, is quite uncertain. The subject is further complicated by the fact that teratomata of the sexual organs are not uncommon, especially in the female, whereas other somatic teratomata are very great rarities. Such a difference in relative frequency suggests the possibility that the two groups of teratomata may have totally different origins from one another. Fortunately, of the many forms of symmetrical conjoined twins, it is only those belonging to the ischiopagus, xiphopagus, and sternopagus groups that are likely to survive their birth by any prolonged period. Cases of craniopagus and ischiopagus must be kept lying down and they naturally fall an easy prey to any slight infection. Sir JOHN BLAND-SUTTON has recently drawn attention to the desirability of endeavouring to separate the autosite from its parasite in cases of asymmetrical conjoined twins,[1] and in view of the miserable nature of the existence which symmetrical conjoined twins may have to endure, it is not too much to say that it is the duty of the surgeon to attempt their separation, if he believes that there is any chance of success.

THE DISPOSAL OF THE DEAD.

STATISTICS which have been obtained through the courtesy of certain municipalities in England and Wales give striking information concerning the cemetery undertakings of the country. The figures have been furnished to the Cremation Society of England, and form the text of a valuable little book which has been published this week.[2] The Cremation Society addressed 198 municipal and burial authorities, of which no less than 166 replied to a questionaire in which the following information was required: the name of the cemetery or cemeteries under the municipal authority, the date of establishment, the area of land occupied or reserved, the capital expenditure on the undertakings, and the total interments up to the end of March, 1926. Further details asked for included the average income and expenditure of the three years ending the same date, and the number of interments per annum; from these figures the average deficiency, if any, for the three years in question could be obtained, as well as the average cost and loss per interment throughout the period. Information was also sought as to the estimated life of any cemetery or cemeteries now in use, and as to any authorised or contemplated expenditure on additional cemetery undertakings. All who have ever sent out a questionaire desiring detailed information will recognise that to receive 166 categorical responses in reply to under 200 requests is an unusual event: in this case it has no doubt been determined by the fact that the undertakings in question show an aggregate public loss in money, evidencing thus a position for which the municipalities themselves may welcome publicity, as they would welcome any practical measures of relief.

The returns have now been examined, checked, and tabulated by Mr. A. E. PIGGOTT, accountant and auditor of Manchester, and they form the most complete information of the kind which has been presented to the public, who have hitherto had to rely upon such references as could be discovered in the Municipal Year Books, the London County Council statistics, and the Ministry of Health statistics. The figures relate to 305 cemeteries owned and managed by local authorities, acting as burial authorities in their respective areas. The returns of the 166 municipalities have a reference to a total population of over 17,500,000, and the cemeteries occupy 8400 acres of land. An exact summary of the returns shows the following results:—

Capital expenditure on undertakings ..		£5,449,472
Total number of interments to March 31st, 1926		10,784,989
Expenditure per annum	(average of three years)	£800,405
Income ,,		£638,272
Deficiency ,,		£162,133
Number of interments per annum ..		173,073
Average loss per interment		£0 18 9
Average cost ,, ...		£4 12 6

The perusal of the returns, in which about one-half of the total population of England and Wales is represented, prove our methods of burial to be seriously extravagant, while the annual loss indicated may be increased, though it can hardly be diminished. A closer analysis of the figures points to an average gain of 11*s.* 5*d.* per interment in the case of 28 authorities only, while in the remaining 138 cases the average loss is £1 6*s.* There may be room here for economy, and the idea gains support from the considerable variation in the loss per interment in the different centres, which is heavier in the thickly-populated manufacturing towns. The explanation may well be that in some instances the expenses incurred have been on a pre-war basis, while in others they have been subjected to a post-war increase. But even if economy is possible in some, and possibly in many, areas, the fact will still remain that the land, whose present occupation entails these expenses in employment and upkeep is sterile, that this sterility occurs in the very places where the areas are most required for housing purposes, and that much land will have to be acquired annually for this unremunerative use. On all sides we can see chances of greater expense to the public, and on no side can relief be clearly expected.

It is nearly 25 years since the Home Office made its first regulations for England and Wales, subse-

[1] THE LANCET, Jan. 7th, p. 24.

[2] Municipal Cemetery Undertakings. Statistics furnished by the municipalities in England and Wales giving the population, number, and area of cemeteries under their control, together with the capital expenditure, ordinary expenditure, and income to March 31st, 1926. George A. Noble, 52, New Cavendish-st., London, W.; A. E. Piggott, 56, Mosley-st., Manchester. 2*s.*, post free.

quently replaced by those of 1920. It seems strange that similar regulations for Scotland are only now appearing. It has been calculated that, with a death-rate of 500,000 per annum, an area of 500 acres must be set aside yearly if earth burial is the method of disposing of the dead. Such a figure indicates to burial authorities that cremation has economic, as well as hygienic, advantages, yet cremation is but slowly overcoming the naturally conservative feelings of the community. As THE LANCET has remarked before, the only serious argument against the burning of the dead is the supposed danger that it may destroy the evidence of foul play. We find that danger slight. Before the Cremation Act was passed in 1902 cases were known in which persons had resorted to burning as a means of preventing an inquest. Since the Cremation Act has been passed and the burning of bodies has been meticulously regulated, it has never been suggested that cremation has been used for the concealment of crime. Murderers like CRIPPEN and ARMSTRONG, whose guilt was established by evidence from the bodies of their victims, might have saved their necks if the bodies had been burnt and exhumation thus made impossible; but they knew better than to run the risk of the medical supervision and examination which the Act enjoins.

In 1926, when Parliament wisely tightened up our system of death certification in the interests of public safety, it was the danger of concealing crime by earth burial rather than by cremation which required attention. The Cremation Regulations for England were made more stringent last year, and it is hard to see what more effective safeguards against foul play could be devised.[3] To summarise them once more, cremation can take place only at a recognised crematorium. Except where an inquest has been held and a coroner's certificate given, no cremation is allowed until the death of the deceased has been duly registered or a certificate has been given in pursuance of Section 2 (2) of the Act of 1926, that the death of the deceased is not required by law to be registered in England. Cremation cannot take place without the following formalities: First, there must be an application on Form A, with statutory declaration by an executor or by the nearest surviving relative; if anyone else makes the application he must show good reason why he does so, and why the executor or nearest relative does not. Then there must be a certificate on Form B, by the registered medical practitioner who attended the deceased in his last illness and who can certify definitely as to the cause of death, and a confirmatory certificate on Form C by another medical practitioner possessing specially prescribed qualifications. Forms B and C are not dispensed with unless there has been either an inquest or a special post-mortem examination by an expert pathologist. The statutory functions of the medical referee are particularly important. He must refuse to permit cremation unless satisfied that the fact and cause of death have been definitely ascertained; "and, in particular, if the cause of death assigned in the medical certificate be such as, regard being had to all the circumstances, might be due to poison, to violence, to any illegal operation, or to privation or neglect, he shall require a post-mortem examination to be held, and, if that fails to reveal the cause of death, shall decline to allow the cremation unless an inquest be held and a certificate given by the coroner in Form E." If it appears that death was due to poison or the other above-mentioned causes, "or if there is any suspicious circumstance whatsoever," the medical referee must decline to allow the cremation unless an inquest is held. Finally, he is not obliged to state any reason if he disallows cremation. It is hard to imagine more stringent regulations. In the working of them the country has placed remarkable confidence in the medical profession, and it is for that profession to ensure their successful operation and to remove any trace of popular misapprehension.

[3] See Conduct of Practice, p. 142 et seq.

Annotations.

"Ne quid nimis."

HEALTH OF THE NAVY IN 1925.

THE latest annual report[1] of the health of th Navy deals with the year 1925. It appears nin months after its predecessor.[2] Its figures show few sick, fewer deaths, and fewer sick daily, though mo invaliding. Venereal disease is reduced, but tuberc losis has increased, especially at the higher ages. 1925 the average number of men in the "tot force" was 89,950, a slight increase. In additio there were also 4060 marines at headquarters, add tional to the "total force" mentioned. This group marines probably contains older men; they ha numerous small injuries, and more invalids from hea disease. They are remarkably free from venere disease, reporting no new case of syphilitic infecti and a total incidence of only 19 per 1000. T following comparative review shows the figures of t previous year in parentheses. The decimals are rat per 1000. The total cases amounted to 464·8 (486·2 of which wounds in action were 0·03 (0·04) and oth injuries 87·4 (90·0); the cases of venereal disea were 71·7 (81·8), and of all other diseases 305 (314·0). There were 254 (271) deaths, which ga a mortality of 2·82 (3·1). The chief causes of dea were: effects of suffocation, 73 (69 in the loss Submarine M.1); from tuberculosis, 37 (24); fro accidents, 28; pneumonia, 14 (13); heart disease 9 (6); septic infection, 8 (4); disease of intestin 7 (21); malignant disease, 7 (9); and enteric fev 3 (10). The chief causes of the 1412 (1272) invaliding 15·7 (14·5) per 1000, were: diseases of the ey mostly errors of refraction, 256 (161); tuberculos 224 (159); nervous diseases, 176 (191); diseases the ear, 144 (108); circulatory system diseas 99 (80); diseases of the digestive system, 80 (57 venereal disease, 77 (239); including gonorrhœa, (206); and injuries, 58 (60). The death-rate fro disease was 1·36 (1·78), the lowest hitherto record Vaccinations and revaccinations, 21,558 (15,868), noted; there were 2 (2) cases of small-pox. enteric fever there were 40 (85) cases with 3 deaths. A small group of 17 or 18 cases (no deat occurred in *Emperor of India* in the Mediterranea ascribed to "infected food, probably supplied fro the canteen"; the cases were all mild, which thought to be due to the recent preventive inoculati of all the patients (within 5–9 months). The figu of tuberculosis were unfavourable last year, and t year there is a considerable increase: cases, 2 (2·2); invalided, 2·49 (1·8); deaths, 0·4 (0·2 From the table on pp. 16–17 we gather that t increase in invaliding is chiefly at ages over 25, a in men of over five years' service, rather late for t development of tuberculosis that was present l latent at entry. Do these cases occur more in la or small ships? No explanation of the increase s offered in the report. The heaviest incidence see still to be on telegraphists, 12 (11). Non-pulmon cases are this year for the first time separated fr the others, and seem to prevail more at the earl ages. Pneumonia, 221 (182); deaths, 14 (13), l slightly increased, but pleurisy, 140 (160), is less, a there is less malaria, 258 (338), and less sandf fever, 65 (79), though more dengue, 43 (18). T incidence of venereal disease is less, 71·7 (81· China manifests its old baneful pre-eminence w 211·3 (248·4) cases, new cases 168·0; marine he quarters have an incidence of 19·19. There is n increase in cases of gastric, 71 (33), and duoden 52 (47), ulcers. There were no cases of scurvy repor this year, but 3 (2) of beri-beri. Scabies is a lit increased, 11·1 (9·56); each case averages 5·71 d

[1] Statistical Report of the Health of the Navy for 19 H.M. Stationery Office. Pp. 139. 4*s.* 6*d.*

[2] THE LANCET, 1927, i., 1045.

ıder treatment. The account of the training ships meagre; they seem to have had 5 cases of tubercle ıd some 35 of pneumonia, but there is no account all of the health of the cadets at Dartmouth.

ANEURYSMAL DILATATION OF THE LEFT AURICLE.

In chronic rheumatic carditis, especially when itral stenosis is the main lesion, the left auricle ıdergoes a certain amount of dilatation and hyper-ophy. The extent of this dilatation is, as a rule, ırprisingly small in proportion to the work which ıs to be done. In rare cases, however, the auricle ecomes extremely dilated, and at autopsy its capacity sometimes found to be nearly 2 litres. The reason hy this excessive or aneurysmal dilatation occurs some cases and not in others gives rise to con-derable speculation, and is discussed in detail in ıe current number of the *Quarterly Journal of Medicine* by Dr. J. Crighton Bramwell and Dr. J. B. uguid, who report two cases which came under eir notice and review 18 others collected from the erature. They found that the associated adhesive ericarditis and lesions of the mitral valve varied so uch that neither could be regarded as the primary use of the extreme dilatation of the left auricle. ıe common lesion found was a localised ischæmic rosis of the auricular wall, and this, it is suggested, as due to embolic plugging of some abnormally tuated auricular branches of the coronary artery. still rarer cases weakening of the auricular wall is ıe to extension of disease from some neighbouring gan. The dilatation takes place in an unusual rection—the "horizontal dilatation" of some riters. In most of the cases the dilated left auricle as found to have extended under the right auricle ıd the superior vena cava to form the right border the heart, and in an extreme case such extension used collapse of the lower lobe of the right lung. om this it might be deduced that the abnormal stribution of the auricular branches of the coronary tery affects mainly the right side of the left auricle, ıd that the axis of the intra-auricular pressure is clined towards the right. It was often noticed at the exercise-tolerance remained good for many ars because, as Dr. Bramwell and Dr. Duguid int out, the brunt of the lesion falls on the auricle, hilst the ventricle remains healthy and able to pertrophy and maintain the circulation.

THE ACTION OF LIGHT ON THE EYE.

Some weeks ago we gave a brief account [1] of the ork of E. D. Adrian and Rachel Matthews on the scharge of impulses of the optic nerve of the conger l when the eye is exposed to light. These investi-ıtors have continued their researches, and in a further ıper [2] describe more particularly the initial stages of ıe process and the effect of flashes of light of short ıration—i.e., they deal mainly with the processes volved in the excitation of the retinal elements and ıt little with the subsequent nervous changes. The ethods employed were much the same as those used the previous work. Special attention was given to termining the reaction time—the period between ıe beginning of the exposures to light and the ginning of the response in the retina or nerve—ıd to the effect of intensity and duration of the ısh of light on the nerve reaction time. It was und that for a given intensity of light, flashes hich exceed a certain critical duration all give ıe same reaction time and a discharge of the same aximal impulse-frequency in the optic nerve. With ıorter durations the reaction time is longer and the ıpulse-frequency is smaller. Using flashes somewhat ıorter than the critical duration, it was found that definite quantity of light (intensity × duration) over a given area always produces a definite reaction time and a response of definite impulse-frequency, whatever the intensity of the light. These results hold good not only for changes in the intensity and duration of the flash, but also for changes in the area illuminated. A definite quantity of light (intensity × duration × area) produces the same reaction time, though the retinal area illuminated varies from 0·08 to 0·9 mm. diameter. The processes leading to excitation may be divided into a primary change, coinciding with the flash and forming a product proportional to the quantity of light received, and a secondary change outlasting the flash and leading ultimately to the excitation of the nervous structures. The rate of the secondary change is a linear function of the amount of "light product" or "light effect" found in the primary change. The relation between area and intensity must mean that the total effect of the light is transmitted to some region whose extent is independent of the area illuminated. The effect might be diffused widely over the retina or concentrated on a small number of nervous paths which have an overlapping distribution on the retinal surface. In either case, the transmission of the light effect must take place rapidly as part of the primary change, and the secondary change must occur in the region to which the light effect is transmitted.

We understand that Dr. Adrian will summarise his important observations in a book, entitled "The Basis of Sensation: the Action of the Sense-Organs," [3] which is now in the press.

LIFE INSURANCE IN THE TROPICS.

The interest of life insurance in the tropics to medical men lies chiefly in its property as a definite quantitative assessment of the extra risks to the life and health of a person who lives and works under climatic conditions to which he is racially unadapted. Apart from the especial responsibility of those who examine candidates for insurance, the subject is vital to all medical men practising in hot countries. The peculiar position of Britain as the administrator of large areas of the tropics gives it perennial importance, but it has been raised rather more acutely of recent years by the "white Australia" policy. Considering the money and lives involved, the certain knowledge which exists about these extra risks is surprisingly scanty, and the consciousness of this deficiency provoked an interesting discussion at a meeting of the Section of Tropical Diseases of the Royal Society of Medicine on Feb. 2nd. As Dr. J. F. C. Haslam pointed out in his opening paper, the health administrators of the Commonwealth are claiming that the increased risks are due solely to tropical disease, which in the absence of a native population is practically unknown in Northern Australia, and that a hot climate of itself is no menace to health. The difficulty is to get evidence. Dr. Haslam quoted Sundstroem, whose material was too small to give force to his results, and read part of a letter recently published by Sir James Barrett, [4] who considers that the matter has been settled by several generations of successful colonists. Sir Leonard Rogers, in the subsequent discussion, produced post-mortem figures showing that one-third of the mortality in India is due to tropical disease. Even if the Australian authorities are right, however, the variation between tropical countries is so great that their conclusion would be of little help elsewhere. Moreover, individuals and races vary tremendously, and southern Europeans may be expected to tolerate conditions which northerners might find impossible, in spite of the vehement assertions of Cilento to the contrary. A perusal of the very able Review of Literature on the Physiological Effects of Abnormal Temperatures and Humidities, published by the U.S.A. Public Health Department last year, will not, as Dr. Haslam

[1] The Lancet, 1927, ii., 1247.
[2] Journal of Physiology, 1927, lxiv., 279.

[3] To be published shortly by Messrs. Christophers, 22, Berners-street, London, W.1.
[4] Brit. Med. Jour., 1927, ii., 1244.

asserted, by any means convince a person of open mind that high temperatures have no ill-effect. Moreover, it is a matter of common consent that white women suffer more in the tropics than white men, and industrial experiments have shown that the adverse factors are actually the heat and humidity.

It is not, of course, true that insurance premiums are an exact measure of health risks, for their assessment depends to a large extent on the business policy of the particular company. The extraordinary variation between the rates for tropical insurance quoted by different concerns is, however, largely due to the failure of their medical advisers to provide them with adequate statistics. Dr. Haslam produced some figures supplied him by different companies for extra premium on a £1000 policy, payable after 20 years' residence in various parts of the tropics. The quotations for America varied between £25 and £150, those for East Africa between £20 and £180, and those for West Africa between £45 and £375. He stated, however, that fresh knowledge of the variations between different parts of the same colony is being used to modify the rates charged, and urged a much fuller study of the factors affecting health all over the tropics. From the actuarial point of view, a paper contributed by Mr. L. E. Raynes, of the Institute of Actuaries, corroborated the strictures passed by Dr. Haslam. The insurance expert uses the mortality table as his instrument, and this, as he reminded the audience, is valueless unless it includes a distribution of both the population and the deaths according to age. Offices have come to rely upon their own very limited experience of tropical mortality, and since much of this is necessarily spread over a great number of years, it cannot take account of the amelioration of conditions which has modified the actual mortality figures of most colonies during recent times. The results of Mr. Raynes's recent personal research provide evidence both for the importance of climate and for that of the presence of disease. He finds, for instance, that mortality is definitely lower in the hot dry plains than in the moist equatorial swamps, but also that the health and self-control of the Northern European, and his insistence on public hygiene, have a definite effect upon the death-rate. Moreover, he detects what may be a psychological factor in the returns of Northern Nigeria, where farmers live long but lonely pioneers fare badly. Lastly, he attaches importance to the disputed factor of acclimatisation. The general death-rate in the first 18 months of tropical residence is, he says, 1·405 per annum, but between 1½ and 4½ years it falls to 0·881 per annum, and some offices recognise this fact by lowering their rates after the first few years. This matter of acclimatisation was one upon which a good many speakers at this meeting held strong views. Dr. Andrew Balfour, the president, agreed with Cuvier that the nervous system was " at the bottom of the whole animal," and was what really got acclimatised. Dr. H. S. Stannus complained that the conditions in some colonies were now so favourable that men were protected from ever getting acclimatised. Dr. J. B. Christopherson thought that the blood was as important a factor as the nervous system, both in acclimatisation and in the ravages of climate. It was this speaker who raised a point which deserves consideration by every resident in the tropics: tropical conditions are hostile to health, but not to longevity; therefore the best form of insurance is the endowment policy. That this suits the insurance company equally well was admitted by Mr. R. E. Underwood, who likened it to a bet laid both ways. From the company's point of view, he said, it is a great advantage to get rid of a man before his time comes to die. Some companies offer a double endowment at ordinary rates to men living under certain types of mortality risks. Other important factors brought out in the discussion were occupation and personal habits. It obviously makes a great difference, as Mr. Underwood pointed out, whether a man is going lion-hunting or proposes to manage a bank, and at least one concern looks at the occupati more closely than at the man. Personal habi especially indulgence in alcohol, have much improv in recent years, but the question of how a particul candidate is likely to shape in this respect is st according to Dr. Graham Forbes, one of the unkno factors with which insurance companies have contend. The question is beset with innumeral difficulties, and is only to be solved, as Dr. Hasla said, by an enormous amount of patient work in parts, not only of the tropics but of countries wi similar climatic conditions, and in different distric of the same country. One factor in the statisticia favour is that the men who go out to these countr as servants of the Government or large tradi corporations are usually fairly sound to start wit. On the vexed heat and humidity question, Dr. Hasla quoted Dr. Leonard Hill's dictum that the importa thing was the rate of loss of heat. It is possible th extended work with the kata-thermometer m modify quite a number of current ideas.

THE YOUNG FILM-ACTOR.

REGULATIONS to protect juvenile cinema act are recommended on the ground that lazy or ambitic parents, fired by the rumour of fabulous incom are apt to push their children into the professi without regard for health and education. The c ditions under which these children work in parts f America has been impressively described by Ms Minor, of Toronto,[1] who speaks of long hours sp t in rain or snow; of excessive fatigue due to lc intervals between the filmings, during which there s no provision for rest or refreshment, of the effect f intense light on immature eyes, of the results f occupying childhood with simulated emotions a unreal personalities, and the methods in use p procure laughter or tears at the right moment fr tiny children. In some countries there is still p legislation to prevent these abuses, and in others e laws are rudimentary. Germany, California, and N York State, says Prof. G. Ichok in a recent artic[2] have special regulations governing employment, a these are, of course, the countries where the fi industry is most flourishing. Austrian and Ital n law forbids the use of children altogether, except r artistic or scientific films. In Berlin no child less th 3 years old may " act " for the cinema; but elsewh e no minimal age is enacted. Permission is requi d for children under 14 in Austria and Germany, un r 15 in Italy, and under 16 in California and New Yo. In Germany the children can only be employed r six hours a day, and no permit is granted unles a guarantee is given that the work will not affect e child's health. The same guarantee is required n Italy. In California the maximal working day s eight hours, four of which must be occupied in sch l instruction, which is provided in special classes n r the studio. In Germany the children must conti e their attendance at an ordinary school and perm s are refused if there is reason to think that the sce s in which the child is to appear are likely to have a ld moral effect or over-excite him. In Berlin, as in C i- fornia, a parent or member of the family must acco- pany the child, and between filmings he must be un r qualified guardianship. In Italy the authori s require the written consent of a parent or guard n and must be satisfied that the child will work i a good moral atmosphere. Th is in many countr s, Prof. Ichok shows, the entry of children into e cinema world is safeguarded, but once in it they e left more or less to their fate, except in Germa y, where the authorities demand precise information s to the scenes in which the children appear, the v y in which they are called to their work, and the clot s they wear therein. Berlin also prescribes a maxi al period of ten minutes for light and a special la p system.

[1] Revue Internationale du Travail, 1927, xv., 264.
[2] Revue Internationale de l'Enfant, 1927, iv., 755

Our own country differs in its methods. Although e theatre and similar institutions are covered by vs regulating the employment of children, the film dustry is not included. Local authorities, however, ve the right, under the Education Act of 1921, to bid or to regulate the employment of children in y industry. The general laws governing the work children ensure that no child under 12 shall work ve for his or her parents, and that no child under 14 ay work before 6 in the morning, after 8 in the ening, or more than two hours on a Sunday. In actice, Prof. Ichok thinks, the results are satisctory, as all local authorities have exercised the wers accorded to them, so that adequate restraint exercised without precise legislation such as is nd in America.

POST-OPERATIVE PNEUMONIA.

THE term "post-operative pneumonia" is loosely plied to conditions ranging from mild bronchitis to vere broncho-pneumonia and massive collapse of e lung. Even the dividing line that separates it m infarction is far from clear, for some authorities ld that pulmonary sepsis following operation is en embolic in origin.

In a recent review [1] Dr. Quénu and Dr. Oberlin scribe the main clinical types of post-operative mplications in the thorax. The commonest is nign; after an interval of from 24 hours to five ys there is a sudden rise of temperature, which soon ls again by lysis. In this type the physical signs e usually an area of dullness, with tubular breathing the base of the lungs; the sputum is mucopurulent d rarely tinged with blood, and the organism is often pneumococcus of type IV. Recovery is the rule, t worse symptoms may supervene. Alternatively e graver forms of infection may first manifest themves by fever on the third or fourth day, with signs broncho-pneumonia, and expectoration which is en fœtid. The course taken by the disease is riable and prognosis must be governed more by other ctors—hæmorrhage, infection, cachexia, age—than physical signs. Massive collapse of large areas of e lung has been described, especially after operations the upper abdomen. Here again the symptoms d signs are very variable and depend on the nount of collapse and the degree of obstruction of e bronchi, the sign of most diagnostic value being splacement of the apex-beat towards the affected le. Unless the collapse is gross the outlook should favourable.

Whilst mental and physical depression are important edisposing causes of post-operative pneumonia, e liability to contract it is also increased by the esence of infection in the nose, mouth, larynx, or onchi, or by previous damage to the lungs by eumonia or tuberculosis. Exposure to cold is other factor in causation, and the incidence is said be greater during the winter months. Irritation d cooling by the anæsthetic has also been blamed the ground that ether chills the alveolar air, ritates the bronchial tubes and alveolar epithelium, d causes a profuse secretion of mucus which forms ideal culture-medium for pathogenic organisms haled from the mouth and upper air passages. By ministration of warmed ether by the intratracheal ethod, it is claimed that these disadvantages can be ssened, but Dr. Quénu and Dr. Oberlin strongly commend that this anæsthetic should not be given the closed method in high concentration as the sult is often hypersecretion of mucus. Chloroform, though less irritant and less chilling, is more pressing to the patient, besides carrying the risk of dden heart failure, and therefore has no advantage er ether even from the point of view of post-operative fection of the lungs. Probably the rôle of the neral anæsthetic as a predisposing factor is considerbly exaggerated, for pulmonary complications are common after operations under local anæsthesia. What may be most important is the fall in blood pressure which usually follows a surgical operation, together with deficiency in aeration of the blood. This deficiency is especially noticeable after operations on the upper abdomen which make respiratory movements difficult, owing to pain and bandaging of the lower ribs. Distension of the stomach and intestines with gas and prolonged lying on the back cause further limitation and encourage retention of secretions in the lungs and bronchi. Whatever anæsthetic is used the most important factor determining post-operative pulmonary complications is the site of the operation. Upper abdominal operations are the common precursors and reflex inhibition of the diaphragm the immediate cause of the trouble.

[1] La "pneumonie" post-opératoire. By Jean Quénu and rge Oberlin, Archives Médico-Chirurgicales de l'appareil spiratoire, 1927, ii., 138.

PHYSIOLOGY IN POLITICS.

A VOLUME, entitled "Britain's Industrial Future,"[1] has just been issued under the authority of a number of highly competent men. The political leanings and claims of this report are obvious, but the stimulus given to thought and action by the comprehensive survey it presents must not be ignored by the medical profession for this reason. Rather the reverse; for when the laymen pay lip service in such maxims as "A nation's wealth is that nation's health," the truth obtains confirmation from medical work. Unrest and deep-seated discontent are expressions in the body politic, as in the individual, of irritation and underlying pathological trouble. Nevertheless, if anyone is too riddled with disease, like a race ridden by malaria, he has not the energy to express discontent—that divine spark of convalescence. History has portrayed this spark breaking forth ever and again into flame as the political ill-health of mediæval Europe culminated in the feverish forms of revolution; the industrial strikes, which are symptomatic of modern unrest are similarly signs of a sickness among nations who are now convalescing. The different pathological combinations of governance and public health, which spell either revolution, or hardly won progress, or steady advance towards that full and free life which eager hearts expect, have never been determined. But every nation is said to possess the government it deserves; an unhealthy people can get little value from what, for a vigorous race, would prove a stimulating constitution, while a strong stock will find an apparently oppressive state barely a burden to be lightly tossed aside.

Such are the things which add significance to the analysis given early in this report of the present state of British national life and industry. The truth is admitted that the wealth of the country is at present ill-distributed; no word is added that the distribution of the nation's health is at least as diverse—a truth borne testimony to by the Registrar-General's occupational statistics, noticed in our columns last week. So long as the distribution of health is ill-adjusted, so long will the distribution of wealth be ill-adjusted, no matter what draught of reorganisation be administered to the body politic. Minimum wage schemes and family allowances must fail, so long as they are based on the "capacity of industry to pay," rather than on the physiological necessities of life; and we are happy to believe that those who have the conduct of our national business are now aware of all this. Certain necessities are fundamental, not merely to health and contentment, but to life itself. This was revealed in the war dramatically, but the lessons then learned remain pertinent to-day. We find in these pages that two trustworthy authorities have stated a coal-miner's daily need for food-energy to carry on his work at widely different figures. There this important question is left undecided, while from every side panaceas are propounded to cure the poor coal trade patient on the basis of what he can afford to pay. What, however, must the miner eat to enable

[1] Britain's Industrial Future. Being the Report of the Liberal Industrial Inquiry. Ernest Benn, Ltd. Pp. 503. 2s. 6d.

him to do so many foot-pounds of work underground? Many political economists fail to appreciate, or argue as if there were such failure, that calculations must give way before the laws of life, whereas they should be founded upon those laws. Dublin, the American medical statistician, has suggested forcibly that the real value of human life at any time amounts to five times that of property, while healthy life is of more value than unhealthy life. Public health has so greatly improved as to be deserving of an improved governance to match. Whether adoption of the comprehensive programme advocated in this report—and the programme has the merit of boldness in some fields, even though so neglectful of certain fundamentals—would meet the need, we do not presume to discuss. One advantage it possesses in strongly advocating development of the homeland, the place where the people live, by extended road construction, by more garden cities, by slum clearance on a large scale, by developing docks, harbours, canals, and electrical supply. Health, like wages, must be earned by work, and, in so far as this development would find work where to-day there exists unemployment, it would further improve the nation's health. The means to this end are set out well in this report which is long, but well written; it deals in sequence with the condition of industry, and the organisation of business, with industrial relations, national development, and finance; finally come 36 closely printed pages of summary of conclusions. For us the interest lies in the contribution made to furthering the economics of health. Health is largely a product of environment and food, and by health is meant both physical and mental vigour. Both environment and food-supply in the homeland can be improved. By the time England has been made a land fit for heroes to live in, a heroic race will be found inhabiting it, and indeed to have made the land fit for their habitation. Meanwhile it is—

> That unto him who works, and feels he works,
> This same grand year is ever at the doors.

CONVALESCENCE.

EVERYONE with experience of hospital practice will agree that, owing to the pressure of a long waiting-list, many patients must be discharged in an only partially cured condition. In England a fortunate minority do indeed obtain a few weeks at one of the convalescent homes attached to the larger hospitals, but of necessity the majority must return to their own homes, which, as a rule, cannot provide a suitable environment for convalescence. Some of these patients continue to attend as out-patients for tonics or dressings, but many take their final leave of the hospital still feeling far from strong and receive little or no further guidance and encouragement to help to restore sufficient vigour and self-confidence for a return to full work. In a new book on "Convalescence, Historical and Practical,"[1] Dr. John Bryant records the efforts that have been made in the past by different countries to remedy this defect and to prevent this class of patient drifting to chronic invalidism, a prey to charlatans, and a burden to the rates. London took the lead with the Metropolitan Convalescent Institution established in 1844, and was followed by Paris in 1857, when Napoleon III. decreed the foundation of special convalescent hospitals at Vincennes and Vesinet. America was slow to follow this example, and it was not till 1915 that the Burke Relief Foundation was established for New York and equipped with every facility for occupational therapy. Armed with a keen interest and wide experience of military and civilian practice in this type of work, Dr. Bryant writes with authority and a wealth of detail. Struck by the scantiness of the literature on the subject, he insists that the profession is absorbed in the laboratory viewpoint of medicine and in dealing with acu cases, and that it has neglected the care of the co valescent. Patients are left "half cured." Convale cence is as much a mental as a physical conditio and occupational therapy combined with prescrib graduated exercise is of as much importance as go food and country air. Arguments on the econom side are no less convincing. Convalescent homes a far less costly than hospitals to construct, and t cost of maintaining a patient in them is estimat at one-third of the cost of a hospital case. Agai with adequate convalescent accommodation to f back on, the average stay in hospital can be shorten and expensive hospital extensions may be avoid by a more rapid turnover of patients. Finally, t rates are relieved of the burden of a large number chronic invalids. The book consists of a series articles by Dr. Bryant, revised and incorporated a single volume. This construction leads to lack continuity of argument and some repetition, b the work is of real value in pointing the reme of a serious defect in our present hospital and pub health systems. The chapters describing the Bur Relief Foundation and the occupational thera employed in the U.S. military convalescent cam during the war are of particular interest. They sh what can be done given sufficient resources a enthusiasm, and should be read by all who a interested in the future of our hospital and pub health services.

[1] Convalescence, Historical and Practical. By John Bryant, M.D. New York: The Sturgis Fund of the Burke Foundation. 1927. Pp. 269.

THE CAUSES OF INTRA-UTERINE DEATH.

THE Medical Research Council published in 19 a clinical and pathological study, by Dr. Eardl Holland and Dr. Janet Lane-Claypon,[1] of 1673 de births and neonatal deaths. This summarised t combined investigations of many workers at differe centres throughout the country. In a further rep just issued[2] Mr. A. C. Palmer publishes a detai account of one of these investigations, dealing w 144 cases of fœtal death observed at the Lond Hospital; 141 of the patients were Whiteha women delivered in their own homes by stude or nurses from the hospital; three were priv patients of members of the staff. A complete necrop including weights and measurements, was perfor on all the infants, and the placenta, when obtain was weighed, measured, and examined macroscopica and microscopically. Most of the sections were p pared according to Levaditi's method and investiga for syphilis; other specimens were stained w Ehrlich's hæmatoxylin and eosin, with Weige iron hæmatoxylin and van Gieson's mixture or w Weigert's fuchselin and lithium carmine. Oth were examined fresh on dark-ground illuminati Eardley Holland's first investigation, published 1922, showed that about 20 per cent. of stillbo fœtuses are macerated. Of this series 39, or 27 cent., were macerated and 35·9 per cent. of th were proved to be syphilitic by the identification the *Spironema pallidum* in their tissues. Toxæmia pregnancy, indicated by albuminuria in the moth probably accounted for the death of 11, 7·6 per ce of the total or 28·2 per cent. of the macerated. T cause of death in 12 more was obscure, but mater albuminuria could only be certainly excluded in of these. Maternal morbus cordis and fœtal m formation each accounted for one death. Asphy accounted for the death of 91 out of the 99 m macerated fœtuses, in 12 of whom intracra hæmorrhage from excessive moulding appeared be the fatal factor. Of the eight cases showing asphyxia three had fœtal anasarca and the others died from conditions, such as hydrocephalus eclampsia, which would have caused asphyxia the child lived long enough. Of the six infants w breathed for a short time after delivery, four asphyxia and one had intracranial hæmorrha

[1] Special Report Series No. 109. London: H.M. Statio Office. 1926. 3*s.* 6*d.*
[2] Ibid., No. 118. 1928. 3*s.*

f all the 105 non-macerated fœtuses, 27 died as a sult of maternal disease and 5 of fœtal disease or alformation. Labour accounted for the death of 3, or just under 70 per cent.; syphilis for less than per cent. The placenta revealed no signs of maternal fœtal disease in any of the 99 cases in which it was xamined.

This report emphasises once more the findings of the rger series. With a few exceptions a dead baby is ie result of one of three things: difficulty in labour 0 per cent. of this series), maternal disease (18·7 per nt.), or syphilis (11·3 per cent.). All these are eventable conditions, and adequate antenatal care ould have removed or foreseen the threat to the ild's life. It also appears that syphilis is unlikely have caused the death of a non-macerated fœtus.

MOTOR-CAR ACCIDENTS AND HOSPITALS.

FOR some years past the pressure upon hospital eds and hospital finances caused by the rapid crease in the number of motor-car accidents has been owing in severity. The enormous annual output of otor vehicles of all kinds from the formidable trolley id hardly less formidable charabancs to the deadly otor-cycle, which must move the jealousy of Jehu the shades, forbids the hope that the pressure has eached its peak, and we may therefore confidently xpect that the difficulty will become still more acute. ll over the country hospitals, large and small, are nbarrassed by the necessity of admitting casualties o already overcrowded wards and by the cost of eating patients who are often so seriously injured that eir tenure of beds, sorely needed for local purposes, is rolonged. Thus the annual report of the Manchester Royal Infirmary, which has just been ssued, records the admission of a daily average of 0 casualties—one every 18 minutes throughout the 4 hours. Most general hospitals can tell much the ame story in proportion to their size and geographical tuation. In the hope of obtaining precise informaon on the subject Mr. H. W. Burleigh, the chairman f the Hospitals Motor Accident Policy Association, ast autumn addressed a letter to us asking for details f motor accidents treated at hospitals throughout the ountry. His invitation has been responded to by 183 ospitals, representing 14,169 beds—about one-third f the total of available beds—and the information e has obtained satisfies him that, irrespective of fees o medical men, the cost of motor accidents to the ospitals in the mass must be about half a million a ear. That is an alarming figure, but, as we have said, he trouble does not end there. Lack of pecuniary lasticity is accompanied by inelasticity of beds, and Ir. Burleigh is informed that in many small hospitals, t the approach of the week-end, when the maiming s at its height, medical officers have to hasten the ischarge of the local patients for whom the institution rimarily exists, to be ready for injured motorists, ainly from a distance. To say that this is a grotesque tate of things is to put the situation mildly. This art of the difficulty will not be removed by any rrangement for payment by, or on behalf of, these asualty patients, but it would at least ease the ecuniary perplexities of the hospital and help, in ome measure, towards the provision of more extended ccommodation. It is, therefore, hopeful news that he Eagle Star and British Dominions Insurance ompany have devised a policy which, for a premium f 5s. a year, will guarantee to the hospital which treats patient, injured by a moving road vehicle, a payment f half a guinea a day up to 30 days, together with hree guineas for medical fees, or five guineas should he patient be detained for more than a week. For asualty patients treated, but not admitted, half a uinea would be paid to the hospital and a similar ee to the medical officer. The thoughtful and conderate motorist may reasonably be expected to avail imself of these facilities, especially as he may take ut a policy for each seat in his car—the careful driver s often the victim of the reckless one. It is suggested ith less reason that the pedestrian and the rider in omnibuses and taxi-cabs should do likewise, but it is obviously desirable that there should be as much insurance as possible. There is grim irony in the provision that half benefits only can be paid in respect of motor-cycles and sidecars, though the driver of these dangerous machines may equalise matters by taking two policies for each seat. Simultaneously with the creation of this interesting policy we learn that the Middlesbrough Motor Club has instituted an insurance scheme which, for a premium of half a crown a year secures payments to hospitals in any part of the country ranging from half a guinea for a dressing to £15 for a detention of five or six weeks. If the motor insurance companies would now recognise the indebtedness of their insurers to the hospitals the pecuniary side of the difficulty might be fairly met on large lines. That would surmount what is supposed to be the legal obstacle to voluntary hospitals levying a charge for the treatment of road casualties, and if it be the fact, as has been urged on behalf of these companies, that their premiums are too low to admit of payments to hospitals, it would merely seem that an essential element of protection is lacking. The low terms of the new policies to which we have referred suggest that a very small addition to their premiums would meet the difficulty. To safeguard a man against the injury or destruction of his car while he sponges upon hospitals and doctors for the cost of mending his body suggests a lack of appreciation of rather elementary ethics. Meanwhile it is announced that the King's Fund intends shortly to call a conference of representatives of the hospitals, the insurance companies, and the leading motorists' organisations to consider the whole subject.

Sir James Berry, consulting surgeon to the Royal Free Hospital, has retired from practice, but will remain on the Council of the Royal College of Surgeons of England and complete his term of office as President of the Royal Society of Medicine.

A SPECIAL meeting of the Charity Organisation Society will be held at 296, Vauxhall Bridge-road, S.W., on Feb. 13th, at 3.30 P.M., under the chairmanship of Lord Dawson of Penn, when Sir William Hamer, Dr. Graham Little, and Dr. Humphrey Nockolds will speak on the Voluntary Hospitals and the Public Authorities.

INDEX TO "THE LANCET," VOL. II., 1927.

THE Index and Title-page to Vol. II., 1927, which was completed with the issue of Dec. 31st, is now ready. A copy will be sent gratis to subscribers on receipt of a post-card addressed to the Manager of THE LANCET, 1, Bedford-street, Strand, W.C. 2. Subscribers who have not already indicated their desire to receive Indexes regularly as published should do so now.

CONGRESSES IN CAIRO.—The centenary celebration of the Cairo Faculty of Medicine, combined with an international congress of Tropical Medicine and Hygiene, will be held from Dec. 15th–22nd. The centenary celebration will include sectional meetings in the different departments of the faculty, including operations and demonstrations, and the programme for the congress will include two general meetings on ankylostomiasis and bilharziasis. It is also proposed to arrange a medical exhibition of drugs and appliances. Further particulars may be had from the Secretary-General, Congress Bureau, Faculty of Medicine, Cairo.

The Journées Médicales d'Egypte will take place from Dec. 12th–23rd under the presidency of Prof. J. L. Faure. The subjects under discussion will include the diseases of both temperate and hot climates. There will also be an international exhibition of arts and science as applied to medicine, surgery, pharmacy, and sanitary hygiene. Further particulars may be had from the general secretary, 32, rue Gay-Lussac, Paris V^e. At both the congresses the official languages will be French, English, Arabic, German, and Italian, and members will be granted reduced fares and facilities for travel.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CCLXII.

THE TREATMENT OF PLEURISY.

THE frequency with which pleural adhesions are found during routine post-mortem examinations suggests that pleurisy is far from being an uncommon disease. Attacks of pain in the chest or shoulder are often due to pleurisy although they may not seriously affect the general health, and are considered by the patient to be the result of muscular rheumatism, growing pains, or indigestion.

In the great majority of cases pleurisy is due to the tubercle bacillus and it is better to consider the disease under two headings, non-tuberculous and tuberculous. First, however, I will discuss briefly a few general principles of treatment.

Principles of Treatment.

1. *General Treatment.*—During the acute stage when the patient is febrile he should be kept in bed in a warm but well-ventilated room. The diet should be light but must depend on the state of the patient's digestion. If the tongue is clean and the digestion good a generous diet should be given, but if the patient has nausea and cannot digest food it is best to rest the stomach and give a very light diet until the desire for food returns. The bowels should be regulated, and it is wise to give a dose of calomel at the onset of the illness.

2. *Pain* can usually be relieved by strapping the affected side. The strips of strapping should pass from the vertebral column completely round the chest to beyond the sternum. They should be applied and drawn tight when the chest is in a state of expiration, and it is important to see that they are fixed evenly on the chest. This restricts the movements of the affected side of the chest and relieves pain, but it is not necessary to strap the chest unless there is severe pain.

Where there is very little pain or only a dull ache the application of antiphlogistine or thermogene wool is quite sufficient to relieve the pain, and the feeling of warmth produced is very comforting to many patients. Aspirin or a mixture containing pyramidon and bromide will relieve the continuous aching pain of which some patients complain. If the pain is very severe a small quantity of air or oxygen should be introduced into the pleural cavity to separate the parietal and visceral layers of pleura; 200 c.cm. is usually sufficient to do this, and not only does it give immediate relief, but when the two pleural surfaces again come into contact the pain does not return, possibly because a layer of lymph forms over the inflamed surfaces. It is not therefore necessary to repeat the injection of the gas.

3. *Cough* is generally dry and useless, and if troublesome should be controlled by a linctus such as: morph. acet., gr. $\frac{1}{16}$; acid. nit. hydrocy. dil., ℥ii.; glycerini, ʒss.; aq. ad ʒi. If this fails a linctus containing heroin should be substituted.

4. *Fever.*—The temperature usually falls by lysis in a few days. If it persists one may suspect either the formation of an effusion or a spread of tuberculosis. It is unwise to try to control the temperature by drugs.

5. *Sleeplessness* may be due to pain, dyspnœa from effusion, or cough, and the treatment is to deal with the cause. If, however, the patient cannot sleep, and there is no apparent cause, omnopon, gr. $\frac{1}{3}$, given by the mouth, soneryl, grs. $1\frac{1}{2}$, or medinal, grs. 7, will usually give the patient a good night, but drugs of this sort should be discontinued as soon as possible.

Non-tuberculous Pleurisy.

Pleurisy may be due to a variety of causes. It is not uncommon in the late stages of chronic diseases such as nephritis, and it often follows malignant disease of lung or adjacent organs. It may result from the spread of local inflammations such as pericarditis or pneumonia. In cases of pneumonia due to the pneumococcus there is always some pleurisy which usually heals as the pneumonia resolves. If, however, it leads to an effusion, the fluid formed is purulent and not clear, and we are not concerned with the treatment of empyema in this article.

Streptococcal pneumonia may cause a pleural effusion which is cloudy and opaque, like milk-and-water. These cases are very acute and often fatal, but it is better to aspirate than to resect a rib and drain the effusion. If the fluid re-forms after aspiration and the temperature remains high, the pleural cavity should be washed out with normal saline or a 1 per cent. solution of methylene-blue, and left as dry as possible. At the same time oxygen should be introduced into the pleural cavity to replace the fluid removed. The quantity of oxygen necessary must depend on the size of the effusion and the amount of fluid removed, but enough should be given to leave the intrapleural pressure between 0 and −5 cm. water. Good results are often obtained by these methods even in severe cases, but aspiration alone is usually quite sufficient in the milder cases.

When pleural effusion is due to nephritis or heart failure aspiration relieves the dyspnœa, and the removal of 15 or 20 ounces, especially in cardiac cases, will often make the patient much more comfortable. When the effusion is secondary to neoplasm it should be remembered that it will soon re-form after aspiration, and that there is no need to remove all fluid except to relieve pressure symptoms. In some conditions, such as endothelioma of pleura, the fluid forms very quickly so that it may be necessary to aspirate every day or even twice a day.

Tuberculous Pleurisy.

Patients suffering from pulmonary tuberculosis always have some pleural involvement and are liable to recurrent attacks of pleurisy. But pleurisy often occurs in patients previously regarded as healthy, and in whom there has never been a suspicion of tuberculosis. If we regard such cases as due to the tubercle bacillus which has reached the pleura through the lung it follows that the patient is in grave danger of developing pulmonary tuberculosis. It has been estimated that over 40 per cent. of patients with so-called dry idiopathic pleurisy subsequently develop pulmonary tuberculosis. Of course a large number of patients with tuberculous pleurisy do not develop the disease in the lungs, but completely recover or are left with nothing more than some adherent pleura. There is, however, no doubt that the very great majority of cases of pleurisy are due to the tubercle bacillus, and treatment must therefore be directed to preventing the development of pulmonary tuberculosis as well as to curing the pleurisy. It is often said that tuberculosis of lung is one of the most curable of diseases if treated early enough. Here we have the disease in the earliest stage, and if later a definite and active lesion develops in the lung one cannot help feeling that it might have been prevented.

During the initial acute stage of pleurisy the patient should be put to bed and treated on the general lines already described; recovery is usually quick and uninterrupted.

Sometimes, however, a pleural effusion develops. The fluid is clear and straw-coloured; it contains few cells, most of them being lymphocytes; tubercle bacilli are not found at first, but they appear in effusions which have persisted for three or four months; no other organisms are found. With the formation of fluid the pain disappears and the patient usually feels much better in himself although the temperature persists.

As soon as an effusion has been diagnosed it is safest to remove 5 c.cm. of the fluid for examination in order to make certain that it is not an empyema. If the fluid is clear and appears to be of tuberculous origin it will usually become absorbed in the course

a week or two, and it is better to allow a natural sorption than to aspirate.

Aspiration should be performed only if the effusion is so large that it causes considerable dyspnœa or pressure symptoms, or if it is desired to convert the fusion into a pneumothorax. When more than ounces of fluid are removed it is always best to place it with air or oxygen, otherwise the sudden pansion is apt to set up an acute tuberculosis of the ng, and the rapid lowering of the intrapleural essure may cause œdema of lung, faintness, or even lden death. Oxygen should be given to replace e fluid if one wants the lung to expand in a day or but air is better if it is desired to maintain a eumothorax. This should only be done if the lung ows signs of active tuberculosis.

In some cases where the fluid has taken a long ne to absorb autoserotherapy has been performed. out 10 c.cm. of the fluid are drawn into a syringe, d the needle is removed from the pleural cavity, t before withdrawing it from the skin the fluid is ected into the subcutaneous tissues. I have seen advantage from this procedure, but it is true that e removal of a few c.cm. of fluid for examination is en followed by the rapid absorption of the effusion.

When the patient has recovered from the attack of pleurisy or effusion it is very important to restore his general health and guard against the development of pulmonary tuberculosis. The patient has the right to be told of his danger and will have a very real grievance if he is not told, although one does not want to alarm him unduly. He should be advised to go through a course of training, living regularly, and combining periods of rest with a graduated and gradually increasing amount of exercise. This treatment can be carried out in a sanatorium better than anywhere else, and in no type of case is the value of sanatorium treatment seen to greater advantage. Some patients dread the word sanatorium, and others consider the suggestion of going there a personal insult. In most cases, however, the patient is only too willing to do anything to avoid becoming consumptive, and if it is explained that sanatorium treatment is advised not because he has consumption, but to prevent him from developing it, he will usually agree to that or at any rate to some similar course of treatment.

L. S. T. BURRELL, M.D. Camb., F.R.C.P. Lond.,
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Special Articles.

MEDICAL RESEARCH COUNCIL.

ANNUAL REPORT FOR 1926–27.

THE Report[1] of the Committee of the Privy Council Medical Research for the year 1926–27 contains uch interesting matter. The grant-in-aid of £135,000 ovided by Parliament has been allocated as llows: for administration £9000; to the National stitute for Medical Research, Hampstead, and the m laboratories, Mill Hill, £46,000; for research ants to scientific workers and for the Industrial tigue Research Board, £80,000. Additional grants ve been received for particular investigations from e Dental Board of the United Kingdom, the Empire arketing Board, the Miners' Welfare Fund, the itish Empire Cancer Campaign, and the "Field" stemper Research Council, as well as by private nefactions. The Committee point out that the ilities provided by universities and other centres of search are a valuable form of help. Sir Hugh nderson and Prof. T. R. Elliott have taken seats on e Council in place of Sir Frederick Andrewes and r Cuthbert Wallace, who retire in order.

The Medical Research Council publish their irteenth report this year. They have coöperated th the Ministry of Health, the Scottish Board of ealth, the Home Office, and the departments of ientific and Industrial Research. A Colonial Medical esearch Committee has been appointed to advise the cretary of State and the Council upon medical search in the colonies. The new machinery provided r the Committee of Civil Research is a simple, direct, d flexible method of securing discussion on problems fecting different parts of the Empire in the common ht of administration, experience, and scientific owledge. Steady progress has been made towards e linkage of the research organisations in Great itain with the equivalent organisations in the dian Empire and Dominions. New arrangements ve been made for bringing the Council's research rk into close and regular touch with that of the lonies, Protectorates, and mandated territories. whole-time scientific secretary has been appointed the two departments acting together. It is hoped at the new machinery will enable every part of the tal resources of the Council to find a useful place in e schemes of the new Committee. The Report ints out that tropical disease can no longer be regarded as a separate department of medical research. The stage is set for intensive laboratory investigation to follow up the preliminary field work which is now completed in most directions. In the first place it is being recognised more and more that errors of nutrition produce many diseases formerly called tropical. Secondly there are many non-tropical diseases, such as tuberculosis and measles, which are as common in the tropics as in England and which could in some ways be better studied abroad than at home. With every year it becomes increasingly clear that medical science is one and indivisible and that the work should be done wherever the man best fitted for it can most easily find his opportunities for progress.

[1] H.M. Stationery Office. Cmd. 3013. 3s.

Work on the Heart and Circulation.

The past year began a new decade of the work of Sir Thomas Lewis and his colleagues, and a review of the researches he has made for the Council is given in the Report with the comment: "It is not an exaggeration to say that the output of valuable work from this centre in the last decade has constituted the central stream of progress made in these subjects anywhere." The work is summarised in a recent monograph, "The Blood-vessels of the Human Skin and their Responses," and the results have immediate value for clinical medicine.

Cutaneous blood-vessels subjected to various forms of stimulation, or to histamine, contract imperfectly if at all, under the stimulus of adrenalin and pituitary extract. Telangiectases react in the same way and to this their dilated state may be attributed. The intensity and distribution of emotional blushes is also affected by differences in the tone of the minute vessels. The reaction of skin to ultra-violet light resembles that effected by other forms of stimulation in that it is attributed to the release of a histamine-like substance in the skin. Evidence has been brought to show that the anaphylactic poison in a "fish-sensitive" subject acts on the vessels of the skin by liberating a histamine-like substance. Weakness of the blood-vessel wall has been shown to be an important factor in causing cutaneous hæmorrhage in various diseases. Vessels which have been exposed to injury, such as ultra-violet light or freezing, show a lowered breaking strain. The distribution of hæmorrhages in the skin is governed largely by the pressure obtaining in the corresponding minute vessels and by the local condition of the vessel wall. Drs. Wetzel and Zottermann have confirmed the opinion of previous workers that the coloration of the skin in different parts and different people is chiefly determined by the minute veins, and by size rather than by number. The differences in size are due to differences in the responses which the vessels can offer to distension. A long series of observations shows that the vascular response to injury is always independent of nerves and the flare surrounding the point of injury is brought about by axon-reflex through local sensory nerve-fibres. Vaso-dilatation has been shown to be due to the release of a histamine-like substance in the skin when a sensory nerve-fibre is cut. Sir Thomas Lewis and

Dr. H. M. Marvin suggest that herpes zoster is produced in this way, that antidromic impulses are concerned in controlling the metabolic or secretory activities of tissues supplied by them, and the trophic lesions are due to disturbances of this control.

Dr. A. N. Drury and Dr. N. W. Jones have investigated the rate of dropsy formation and described a method of measurement and the effects of different venous pressures and temperatures. Dr. R. T. Grant has published a description of the development of the coronary vessels of the heart, and has studied a case of defective pericardium, and concluded that the pericardium normally plays no part in supporting the heart wall. Dr. A. A. Osman has applied modern methods of biochemistry to the study of Bright's disease, and published results in the centenary year which give promise of adapting with more certainty of success the treatment of this disease to the particular disorder present. Dr. Osman's work, reported last year, on tests identifying those patients of scarlet fever who are likely to develop nephritis, has been confirmed upon a large scale. His method of treatment by alkalis is said to have reduced the incidence of renal complications from 5·5 per cent. to 0·6 per cent.—a very striking achievement.

Vitamins.

Dr. O. Rosenheim and Mr. T. A. Webster have succeeded in producing vitamin D by the action of ultra-violet light upon a sterol.[2] Recent work has abundantly confirmed their conclusion that ergosterol is an abundant, rapidly available, and astoundingly potent preparation of vitamin D. One ten-millionth of a gramme suffices to prevent rickets in a rat. A number of problems arising from this discovery are now being attacked. Ultra-violet radiation not only forms a vitamin from ergosterol, but destroys it when formed; effort is being made to select regions of the spectrum in which the formative outweighs the destructive action. Cholesterol from skin has been examined and found to contain the vitamin-yielding impurity. This seems to justify the assumption that the preventive and curative effects of sunlight on rickets are due to the natural production and absorption of vitamin D. We can now obtain abundant and cheap supplies of the antirachitic vitamin in a potent and isolated form, so that it is easy to examine the properties of vitamin D without the complications induced by the presence of vitamin A. So far there is no clear evidence of the chemical nature and affinities of the latter vitamin. The colour reaction introduced by Dr. Rosenheim and Prof. Drummond has been used to explore its distribution in the fats of different organs in many animals. The proportion present in some liver fats may far exceed that found in cod-liver oil. The liver oils of the salmon and halibut may be more than a hundred times as rich in vitamin A as cod-liver oil, as may also the liver fats of birds like the grouse or the goose. Dr. Rosenheim and Mr. Webster have found that the liver fats of the sheep, calf, and ox contain ten times as much vitamin A as cod-liver oil, and that the content in butter varies widely according to circumstances. Calculation has shown that the total supply of milk-fat throughout the world is inadequate for the minimal needs of the population. The crucial problem is not, therefore, the hopeless difficulty offered by the shortage of milk-fat; it is the problem of the supply of fat-soluble vitamins which, in the light of these discoveries, can now be cheerfully faced. Our national needs of vitamin A can be met by the addition to the diet of substance from liver fat, either in butter in or margarine or in other ways. It has already been found that the vitamin content of fat from imported New Zealand liver is the same as that from home-killed animals. Moreover the fats extracted from the liver are free from the unpleasant flavour of fish oils and their low melting-point greatly aids incorporation with other fatty materials. The problem of the supply of vitamin D is also now easily solved. The liver fats contain almost none of this vitamin; apparently herbivorous animals, unlike fish, do not store vitamin in the liver. Since, however, it can be produce artificially by irradiation of ergosterol there is no nee to search for natural products.

Human rickets can be very rapidly cured by daily dose of 2 mg. and the amount needed f preservation of health is therefore extremely sma Improvements in the mode of irradiation, alread foreseen, will make a practically unlimited supp available. There is no doubt that the great majori of the population are suffering from deficiency in the essential food elements, and the cost in huma suffering and economic loss is incalculable but certain vast. The Report points out the immense value the nation of nutritional studies, affecting as they a at a thousand points the food of the population, i choice, its preparation, and its manipulation in t kitchen. A small representative Nutrition Committ which was appointed last year drew up a comprehe sive and coördinated programme of work and a attempting to frame a chemico-geographical survey the inorganic constituents of diet available in differe parts of the country and their relation to the distrib tion of disorders in human and animal life. Anoth problem is the so-called "man value"; what are t factors to be rightly used in referring quantitati dietetic estimates of a safe man-power standard by d allowance for age and sex? There is reason to belie that the factors at present used undervalue t requirements of children, and that the standard f the average adult man is too high. What, again, s the biological value, if any, of food taken in exc of the actual needs of the body as judged by t energy expenditure? It is not yet scientifically know how much water a man should drink or what is t best kind of bread to eat. We cannot guess wh natural relations of diet to disease or liability disease are waiting to be revealed.

These are some of the problems which will be unc consideration during the next year of resear activity. The Nutrition Committee have unc consideration more comprehensive schemes for s veying the dietetic needs of different sections of t population and the deficiencies in diet that can traced to remediable accidents of soil, water-supp or the treatment and distribution of foods.

[2] THE LANCET, 1927, i., 306; ii., 622.

THE HUNTERIAN BICENTENARY.

ON Feb. 13th the bicentenary falls of John Hunte birth, and the occasion will be appropriately ce brated by the Royal College of Surgeons of Engla the guardians of the magnificent museum, in Lincol Inn Fields, which bears Hunter's name and has be developed from Hunter's remarkable collection.

The Hunterian Oration will be delivered by Holburt Waring at 4 P.M. on Feb. 14th, on Progress of Surgery from Hunter's Day to Ours. T Oration will be freely illustrated. The festival din is arranged for 8 P.M. on the same day. On Feb. 1 there will be a reception in the College from 3 to 5 P. and the Thomas Vicary Lecture on the Homes Hunter will be delivered by Dr. G. C. Peachey 5 P.M.; a special display of Hunterian specim has been arranged by Sir Arthur Keith, the C servator, and interesting Hunterian relics will shown by Mr. Plarr, the librarian of the Colle during the week.

Thus from Monday, Feb. 13th, to Feb. 18 except on the afternoon of Thursday, Feb. 16 visitors to the Royal College of Surgeons will h an opportunity of examining an extensive display Hunterian portraits, specimens, and relics. In conservator's room will be shown a series of portr representing John Hunter at succeeding times of l His manuscripts and drawings are to be placed exhibition. The conservator has selected specim from the general collection to illustrate the chief Hunter's discoveries. The University of Glasg the governors of St. George's Hospital, the Soci of Apothecaries, and representatives of the Hu

nily have made valuable contributions to the hibition. Specimens have been arranged to illus- ate the background of Reynold's picture of Hunter in some instances the actual specimens being shown. valuable collection of Hunterian relics has been tained on loan from the Wellcome Historical Medical iseum, by the courtesy of Mr. Wellcome.

Dr. Peachey, Vicary lecturer, at the request of the uncil of the College, has had prepared a series of otographs, sketches, and maps to illustrate the rious residences and schools occupied by the nter brothers in London, showing them as they re a century and a half ago and what is preserved them to-day.

New Hunteriana.

Among the many relics of John Hunter which will exhibited at the Royal College of Surgeons on the casion, assuredly one of the most interesting, cently acquired, is the bureau or desk, surmounted a bookcase, presented to the College in 1927 by iss Margaret Hunter. This is one of three bureaux, o of which are now the property of the College, e third being in Edinburgh. Of the College desks e is the escritoire with a roll-top, which has long en a familiar object to visitors to the institution. contains secret drawers and is erroneously supposed have been constructed by John Hunter himself. ore probably he obtained it, as he did the desk th bookcase and capacious drawers, now recently ded, from his close personal friend and near ighbour, Thomas Chippendale, who also sold or ve him a sideboard, some chairs, and other articles furniture. The desk, with bookcase attached, der discussion was probably John Hunter's principal iting-desk. Its interior is delicately fitted and ggests Sheraton workmanship, but the whole ain, though graceful effect, is Chippendale. On the iting-flap the great surgeon probably wrote, in the awers below he kept his papers, letters, and MSS., hile the shelves above may have contained part of at "valuable well-chosen select Library of Scarce ooks," to quote the Christie and Manson Hunter le Catalogue of Feb. 1st, 1794; the possession of is library by Hunter has been disputed by those ho will have it that he was an illiterate, but a sale talogue could hardly include the non-existent. he proceeds of this Hunter sale amounted only to e sum of £1300, a sum ridiculously low even in at age, and the price paid by Everard Home for e three bureaux, according to one authority, was £15. ch fine pieces nowadays would fetch at least £100 ch, but comparisons of price do not mean anything hen 130 years have elapsed. To Home the value of e bargain lay in the contents of the secret drawers d the general contents—viz., all Hunter's note- ooks and other manuscripts. These documents are own to have been in Home's hands before the year 00. Very leisurely he poached on their contents d then as leisurely destroyed them. In 1821 he ld William Clift, Hunter's famous disciple, a book- se with drawers, which is now in Scotland, where at e time it belonged to the late Prof. Chiene, and on e same occasion Clift may have bought from him e bureau under discussion. This at Clift's death as bought by Thomas Madden Stone, long known the College as an ardent Hunterian, for 4 guineas, d at Stone's death it was acquired by Miss Margaret unter, a collateral descendant of John and William. appears that when Clift acquired the bureaux he pposed their contents to survive, and it was not ll 1823 that he was shocked by the casual announce- ent, made while they were driving in a post-chaise, at Home had destroyed the Hunter manuscripts, regretted to-day.

The centenary of John Hunter's death was cele- rated in 1893 when an elaborate catalogue by James lake Bailey, the College librarian, recorded the unteriana collected until that date. The additions that collection during 1893–1928 have been con- derable, and include portraits, manuscripts, the unter Baillie volumes of documents, transcripts of ctures, and many small objects once the property of the famous John Hunter. These taken together will form a large exhibit in themselves, and will be shown in the Council Room, the Conservator's Office, and Room IV. of the Museum.

UNITED STATES OF AMERICA.

(FROM AN OCCASIONAL CORRESPONDENT.)

Small-pox and Alastrim.

A NUMBER of experiments on the immunological relationship between small-pox and alastrim have been made in the hygienic laboratory. Monkeys and rabbits were selected for the subjects. Definite cross-immunity was found between alastrim and "mild small-pox" and between alastrim and vaccine virus. The workers conclude that their results establish additional evidence of the identity of the two diseases (James P. Leake and John N. Force, Hygienic Laboratory Bulletin, No. 149, 35 cents). The same bulletin contains a second paper by the same authors describing a method for estimating the potency of small-pox vaccine. They require that a vaccine of "high potency" shall produce a confluent eruption on from 90 to 100 per cent. of the vaccinated area on the back of a rabbit in a dilution of 1 in 1000, and when further diluted to 1 in 3000 the decrease in confluence should not be over 20 per cent. Such a vaccine applied to a 2 mm. scarification in an unvaccinated individual will produce a vesicle not less than 7 mm. in diameter on the seventh day.

"Narcotic Education."

The number of drug addicts in the United States is variously estimated at from 100,000 to over a million. Some influential people who place their faith in the higher estimates organised about two years ago a body with the resounding title "International Narcotic Education Association." Although founded with a good deal of advertisement and in a perhaps unnecessarily alarmist spirit, the organisation has drawn in men of wisdom and experience from all parts of the country who have been formed into departmental committees on a businesslike basis. These committees held their first annual conference last November and the report of their deliberations, just issued,[1] contains matter of considerable interest. The Association has laid down three propositions in regard to drug addiction: "That the cause is ignorance, that the effect is misery, and that the cure is education." But then, as one of the speakers pointed out, "members of the medical profession, scientists, and chemists are among its victims. Is it fair to assume they do not know? What is it they do not know?" His own answer to the last question is that they do not recognise pain as a friendly messenger. One may doubt whether the broadcasting of this information will reduce the number of addicts. Even the experience of addiction seems insufficient education, for only the more optimistic experts expressed faith in any permanent cure.

Education, it is decided, must be supported by, as it must also support, legislation. A drastic model Bill, presented by the Committee on Law and Philosophy, was adopted with amendments to make it still more drastic; so that in its final shape a pedlar who creates addiction in a minor or employs a minor to create addiction is punishable with life imprisonment. Strong pleas that addiction should be treated as a disease rather than as a crime seem to have found expression in the draft legislation only for addicts not charged with crime. It is recognised, however, that heroin addiction results both in criminal tendencies and in an overwhelming desire to create new addicts. It was shown by Dr. J. F. Fisherman, former inspector of prisons for the Federal Government, that great cruelty results to addicts in county gaols from the ignorance of local physicians of proper methods of

[1] Report of the First Annual Conference of Committees of the World Conference on Narcotic Education and International Narcotic Education Association: 662, Southern Building, Washington, D.C. 75c.

treatment. It was also stated, on the same authority, that uncontaminated prisoners form ready victims to addiction through the overtures of confirmed addicts incarcerated with them. In spite of this the model law requires criminal addicts, as well presumably as the pedlars who serve life sentences, to be committed to a penal institution. A rather surprising provision requires that narcotic education shall be included as a "major subject" in the curricula of all public schools.

MEDICINE AND THE LAW.

A Ridiculous Penalty.

THE solicitors' profession is understood to be making progress towards the consolidation and revision of the Acts of Parliament which prescribe its government. If any similar task is undertaken for the Medical Acts, which have as long a pedigree and as tangled a purport as the Solicitors Acts, the question of increasing the penalty for posing as a medical practitioner should be considered. At the Mansion House on Jan. 27th William Faulkner was summoned before Alderman Sir George Truscott for having in December last unlawfully, wilfully, and falsely pretended to be a doctor of medicine, implying that he was a registered medical practitioner. According to the report of the proceedings in the *Star*, the prosecution stated that on defendant's door at Wardrobe Chambers was the name and description, "Dr. S. Boyd Faulkner, M.D. Lond., D.S.C.," though he had no qualifications whatever in this country, and had acknowledged to the Registrar of the General Medical Council that he was not a registered practitioner. The defendant appears to have told the bench that his was a nature-cure establishment, and that he had an electric apparatus; every one of his cases, he claimed, had derived some benefit from his treatment. As Sir George Truscott observed, that was not the question. "The full penalty," said the Alderman, "which I consider wholly inadequate, is £20; you will be fined that amount, and £10 10*s.* costs, or two months' imprisonment." Parliament should take some notice of this judicial comment on the utter inadequacy of the penalty. For a man who has no English qualifications whatever to call himself "Dr. S. Boyd Faulkner, M.D. Lond., D.S.C.," is a piece of impudent imposture fraught with possibilities of grave danger for members of the public whom the Medical Acts are designed to protect.

Professional Secrecy.

Reference was lately made in our columns to recent French discussions of the duty of professional secrecy. Article 378 of the French code was cited in order to contrast the express statutory prohibition which is part of the French law with the ambiguous position of the medical witness in the English law-courts. The discussions in France are continuing,[1] and are usefully analysing the juristical ideas on which the law is based. One idea is that of exemption; the doctor is not obliged to give evidence. This conception seems to leave him a discretionary power of giving or withholding his testimony according to the dictates of his conscience. A quite different idea is that of absolute prohibition, based on the definite interdict in Article 378. To put the matter in another way, the medical witness may be deemed to have an absolute incapacity. Among the implications of the language of the code, four inferences have been evolved. First, it is said, the doctor cannot be heard as a witness even if he consents to give evidence. Secondly, if he does give evidence, judge and jury ought not to take into account what he says. Thirdly, if they do take it into account, the superior court should annul their decision. Finally, the doctor who gives evidence in a court of law can be prosecuted under Article 378. These conclusions are only of academic concern to the medical profession in England where nothing in the nature of an express statutory prohibition has been enacted. In France they appear not to be accepted by the prominent jurists who have written upon the subject. The medical profession in France is evidently dissatisfied with the existing uncertainty; the outcome of the discussions will be awaited with interest.

[1] Bull. de l'Académie de Médecine, 1928, xcix., 76.

River Pollution and Sugar-beet Effluent.

In reports issued last year of the progress made towards purifying our rivers mention was made of the adverse effect of establishing beet-sugar factories. Proceedings have been instituted at Nottingham by the Trent Fishery Board against the Anglo-Scottish Beet Sugar Corporation, though with no conclusive result. It was stated by the prosecution on Feb. 4th that the defendants had already been fined £25; after conviction they could be fined £5 for every day that the offence continued; these and other offenders had been warned that, if the infliction of the original penalty had no effect, the Fishery Board would press for the continuous daily fine until the effluent was properly purified. Biological experiments described by Dr. H. S. Holden indicated that fresh-water shrimps died in seven minutes after being placed in a sample of the effluent from the defendants' premises, and that they lost power to swim after four minutes. Two gudgeon died in little more than half an hour. A civil engineer, giving evidence for the defence, said that every reliable method of dealing with the effluent which he had recommended to the defendants had been put in practice; there were signs of hopeful results from experiments. Mr. William Sutton, an analytical chemist of Norwich, advised delay; in his view things were getting better every year; moreover, he considered that the stream was polluted before it reached the defendants' factory. The case at present stands adjourned for a month.

It is an awkward fact that the two separate functions of the Minister of Agriculture and Fisheries clash irreconcileably in this matter; the encouragement of agriculture is the discouragement of fisheries. According to the report of the proceedings in the *Times*, there was evidence that the Trent occasionally has a run of salmon, about 500 salmon having passed up the river last autumn. The public, which is showing some enthusiasm for the "purer rivers" movement, wonders whether the existing law is inadequate or whether the administration of the law is at fault. It will await the further proceedings with interest.

Spinners' Cancer.

Judge Spencer Hogg, at Oldham County Court on Jan. 26th, had before him an important case in which the question of the legal power given to medical referees under the Workmen's Compensation Act was raised. An application was made by Jane Ann Needham for compensation from the A. C. E. Mill Company, Hollinwood, on account of the death of her husband as the result of spinners' cancer. The husband, who was 65 years of age, had been a cotton spinner for 40 years, but had only been in the employ of the A. C. E. Mill from June, 1925. The respondents contended that he was employed only as an odd man who did not come into contact with mineral oil. After a certificate had been issued by Dr. H. M. Fox, a certifying surgeon, the case was taken to Dr. Judson Bury, medical referee for industrial diseases, who dismissed the mill's appeal and certified that the man was suffering from the disease. It was stated that the man had an ulceration of the neck, and the respondents claimed that this was not due to the employment, and that the onus was on the applicant to prove that it was. The judge said that the decision of a medical referee took the matter out of his hands. If there was an ambiguity in the certificate he would have had jurisdiction; but there was not. The solicitor for the mill remarked that it left the employer in a position of having to pay compensation without the case being heard as to whether or not the disease was the result of the man's employment by the firm. The judge agreed that it really took the jurisdiction out of the hands of those who hitherto dealt with it. He granted the application for £250 compensation, but he granted a stay of execution on the usual terms.

ROYAL SOCIETY OF MEDICINE.

VISIT OF THE SURGICAL SECTION TO CANADA AND THE UNITED STATES.

THE tour organised last autumn by the Surgical ction of the Royal Society of Medicine proved such uccess as to encourage similar ventures in the future. e are indebted to Mr. C. Max Page for this brief tline of the visit.

The party consisted of 25 members, seven of whom re accompanied by their wives. A group of this e is large enough to obtain a considerable reduction railway and hotel rates without being cumber- me to manage. The travel and hotel arrangements re made throughout without a hitch by the Cunard S. Company and the Canadian National Railway mpany, a courier being provided by the ter. Dr. Franklin Martin, Director-General of the nerican College of Surgeons, undertook to get touch with e prominent rgeons in ch place on e itinerary d at every ntre visited e local sur- ons and the spital organi- tions afforded e group a eat welcome. irst-class rogrammes operative rk, and dry nics (to use popular nericanism) re organised. The hospi- lity of our osts," Mr. ge writes, surpassed all pectations a country ready famous this respect. ot only were e entertained the clinics d at clubs, t our hosts were extraordinarily helpful and kind providing motor-car transport and looking after r comfort in every way."

THE SURGICAL SECTION ON THEIR AMERICAN TOUR.

Photograph by Armour & Co.

The Itinerary.

The party crossed in the S.S. *Ausonia* and landed Quebec on August 29th. Six days were spent in nada. At Montreal Dr. A. T. Bazin and Prof. W. Archibald acted as hosts at the General and oyal Victoria Hospitals respectively, and at the tter the Section was fortunate in seeing a thoraco- asty performed by Dr. Archibald. In the evening e party dined at the Mount Royal Club and met rof. Armstrong. At Toronto the group were warmly ceived by Dr. Clarence Starr and saw Dr. Gallie d Dr. Le Mesurier at work. An afternoon was ent at the Toronto Exhibition, and on the following ening some members played golf with Dr. Starr d Dr. Gallie, and the remainder were entertained Dr. Bruce.

A visit was paid to Niagara before proceeding to icago, where, despite our arrival during a week-end hich terminated in Labour Day holiday, a full inical programme had been organised by Dr. reuscher, in addition to various entertainments. n the Sunday the party was conducted by Dr. ranklin Martin over the fine Murphy Memorial which forms a magnificent addition to the home of the American College of Surgeons. We also saw the new North-Western University Medical School, and visited the University Clinic, then nearing completion, in its beautiful surroundings in the University Park. At Chicago the party had its first experience of the intensive operating programmes which our American colleagues know how to stage so well. Interesting operations, in which Dr. Nelson Percy, Dr. Eisendrath, Dr. Cubbins and others took part, were witnessed at the Augustana, Wesley, and Cook County Hospitals. Dr. Franklin Martin entertained the party at Exmoor Country Club on Saturday, and on Sunday a supper party was given by Dr. Kreuscher at the South Shore Club.

After a night's journey the furthest west point of the tour in Rochester, Minn., was reached. Only two days were spent at the world-renowned Mayo Clinic, and they were very fully occupied. Both Dr. C. and Dr. W. Mayo were at home and operated and gave most interesting talks, in addition to entertaining members of the party at their homes. Operation lists, which included some most excellent work by Dr. Judd, Dr. Balfour, Dr. Adson, and Dr. Hunt, made up the surgical programme. On the pathological side the group was fortunate in being present at a weekly meeting of the staff conducted by Dr. H. E. Robertson, and also paid a short visit to the Institute of Experimental Medicine and met Dr. Mann and his co-workers. On the Tuesday night the party dined at the Rochester Country Club, and heard Dr. Mayo, Dr. Wilson, and Dr. MacCarty speak. Returning via Chicago, the party was entertained by Messrs. Armour, and a visit to their stockyard and factory proved an interesting experience. The photograph here reproduced was taken at this stage of the tour.

At Grand Rapids the programme was arranged by Dr. Ferris Smith, and was of particular interest on account of the first-class work witnessed in hospitals smaller than those so far visited. The Butterworth and St. Mary's Clinics were in structure and equipment as advanced as any that were seen in course of the trip. In the evening the party was entertained by the Kent County Medical Society. At Detroit the reception was more than hospitable under the kindly management of Dr. Kelly. Sunday was spent on a yacht trip on Lake St. Claire. The next morning was spent with Dr. MacClure at the beautiful Ford Hospital, and in the afternoon a tour of the Ford factory at Rouge Park, together with a visit to the Ford air port and trip over Detroit on a large passenger plane, made a memorable day. The party met Mr. Ford and his son, and were given an opportunity to see and try their new car. On the following day the Harper Clinic and Receiving Hospital were visited in the morning, and the Jefferson Clinic and Parke Davis Works in the afternoon. The journey to Cleve-

land was made by the night boat, and a very full day was spent with Dr. Crile at his new clinic—an operation list of 12 was completed with characteristic vigour and punctuality by 11.30 by Dr. Lower. A number of short papers by members of the staff followed a visit to the experimental department. After tea and dinner with Dr. Crile the party left for Baltimore. The party experienced a definite change of atmosphere touched with an agreeable southern flavour on their arrival in Maryland—emphasised by the fact that the thermometer rose to 97° F. during their stay. The Baltimore programme was (mercifully under the climatic conditions) confined to the Johns Hopkins Clinics. Operations by Dr. Hugh Young, Dr. Finney, Dr. Dean Lewis, and Dr. Dandy were witnessed, and Dr. Bloodgood gave a demonstration of bone tumours and discussed their diagnosis. Here the party had the pleasure of meeting the doyen of American surgery, Dr. Kelly. Dr. Hugh Young entertained the party at a country club in the evening. Some members visited Washington on the following afternoon, while others went to an outlying hospital with Dr. Bloodgood.

Philadelphia was unfortunately reached on a Saturday, but a full programme was staged. Five surgical clinics were working in the morning in different parts of the city. Most of the party visited the Jefferson Hospital and watched Dr. Chevalier Jackson and Dr. Gibbon at work. Dr. A. Ashhurst was operating at the Episcopal Hospital and Dr. Charles Frazier at the University Hospital. In the afternoon Dr. John B. Deaver carried through a long list at the Lankenau Hospital. The party was entertained at the Penn Athletic Club in the evening and at Dr. Jopson's home on Sunday.

New York was reached the following day, and in the three days at disposal choice was more than usually difficult among the wealth of clinical material available. Most of the party visited the Post-Graduate Hospital and watched Dr. Albee and Dr. Erdmann. On Thursday Dr. William Coley was visited at the Hospital for Ruptured and Crippled. The afternoon was most pleasantly spent in a yacht trip up the Hudson with Dr. George Stewart, most of the party at this stage of the tour being ready for a half-holiday. On Wednesday an interesting symposium in cancer treatment by X ray and radium was given at the Memorial Hospital and afterwards an excursion was made to the amazing new building which is to become the New Columbia Medical Centre. The visit of the party to the Rockefeller Institute where Dr. Noguchi and Dr. Eberling gave fascinating demonstrations was unfortunately cut short by the necessity of catching a train to Boston.

Boston was the last centre to be visited, and most of the party felt sorry to have a bare two days to spend in a city of such historic associations. Prof. Harvey Cushing entertained in the morning at the Peter Brent Brigham Hospital, and later the party went to the General Hospital, a pleasant old foundation with modern additions. In the evening we were entertained at Brookline Country Club. On the following day Dr. Osgood and Dr. Ladd gave us a first-class clinic in their most delightful Children's Hospital, and subsequently Dr. Lahey was seen operating at the Deaconess Hospital. An interesting diagnostic clinic by Dr. Joslin, Dr. Fordan and others concluded our medical experiences.

The Return.

The party returned to New York by train and embarked direct on the S.S. *Lancastria*, glad enough to have a rest, for the infectious enthusiasm of their American hosts had kept an active interest from the start to the finish of the journey. Mr. Page writes of the sense, shared by all the party, of having completed a memorable and inspiring experience. The whole party was strongly impressed by the high standard of surgery which is widely attained in the States, and was filled with admiration for their energy and organisation. From a surgical point of view, in the short time at disposal the able staff work made it possible for the group to see a great deal interesting work, and to obtain an insight in various phases of American life.

The names of those taking part in the tour we as follows: F. Belben (Bournemouth), J. A. Ber (Guy's), R. B. Blair (Hull), E. J. Bradley (Stafford A. H. Burgess (Manchester), H. B. Butler (Guildford L. D. Callander (Doncaster), E. F. Finch (Sheffield W. Gilbert (Port Elizabeth), W. Lennox Gord (Cape Town), C. B. Heald (London), F. S. Hean (Liverpool), J. J. Kearney (Cork), I. Macdona (Huelva), P. H. Mitchiner (St. Thomas's), C. M. Page (St. Thomas's), J. Howson Ray (Mancheste Winifred Ross (Dulnain Bridge), J. J. M. Sha (Edinburgh), E. W. Sheaf (Guildford), G. B. Ston (Kleinfontein), M. P. Susman (London), J. H. Wats (Burnley), J. Whittingdale (Sherborne), J. B. Wilson (Sheffield).

IRELAND.

(FROM OUR OWN CORRESPONDENT.)

The National Cancer Campaign (Ireland).

DURING the past few months several influent meetings have been held in provincial towns in supp of the National Cancer Campaign (Ireland). Last we a successful meeting at Wexford followed meetin previously held at Nenagh and Limerick. Ea meeting was addressed by members of the Cent Council from Dublin, as well as by local speake Cordial support is being given by the medical professi in each centre as well as by the local clergy of churches. In each town where a meeting is held committee is organised in order to maintain interest the movement, both by further propaganda and collecting funds. An active branch of the campai has been organised in Belfast where a public meet will shortly be held.

Charge of Blackmail against a Medical Man.

Last Saturday, before the district justice at Killal Dr. Henry Vincent McKeogh, medical officer Portroe dispensary district, was charged with hav "feloniously, with threats and menaces, demand of Dr. Patrick J. Holmes the sum of £300, with int feloniously to steal, take, and carry away the s £300." Dr. Holmes is medical officer of the Killa dispensary district. Evidence was given t Dr. McKeogh had threatened to complain of Holmes to the General Medical Council, had offered hold back his complaints if Dr. Holmes was will to "meet him half-way," had asked for a sum of £3 and had actually been paid £200. The justice fou that a prima facie case had been established and returned the accused for trial at the next Circuit Co at Ennis, bail being allowed.

MANCHESTER ROYAL INFIRMARY.—During the p three years there has been a decrease in the deficit acco of the Manchester Royal Infirmary and the Barnes C valescent Hospital, Cheadle. For the financial year j closed the deficit was £10,847, compared with £18, in 1926 and £22,740 in 1925.

RIVER POLLUTION.—At a meeting of the Jo Advisory Committee on River Pollution, held on Feb. 2nd 3rd at the Ministry of Health, evidence was taken from West Riding of Yorkshire Rivers Board, the Mersey Irwell Joint Committee, the Ribble Joint Committee, Thames and Lee Conservancies, and the Tame Basin Jo Committee, all whose witnesses were unanimously of opinion that the proper unit for administration purp was the watershed. In large watersheds such as the Tr it might, however, be desirable for the watershed board work through subsidiary bodies in order to utilise to the local knowledge and zeal. There was some divergence opinion as to whether land drainage and pollution pow should be combined in the one authority. The gen trend of the evidence went to show that results were achie much more by persuasion and advice than by legal proce ings, but that these methods could only be used effectiv where there was an adequate technical staff.

Public Health Services.

Antituberculosis Schemes.

All administrative tuberculosis officers were asked furnish the Ministry with very full returns of the ork done under their schemes in 1926. The Ministry as just issued to all the county councils, county orough councils, and tuberculosis joint committees England an analysis of these returns, designed to ve some idea of the scope and character of the work each district. An explanatory statement suggests at the local authorities should make comparisons of eir work with that of other districts of similar size id type with a view to considering whether they e getting the best possible for a given financial itlay. The analysis consists of tables with 46 columns ving particulars for all the districts. Cols. 1 to 3 ve the population, deaths and death-rate from berculosis. Cols. 4 to 6 deal with the efficiency of tification and of the revision of the registers. Col. 7 ves the proportion of the total tuberculosis cases alt with under the scheme. Cols. 9 to 12 deal with e extent to which contacts and suspects come up to e dispensary for examination; cols. 8, 13, and 14 with e amount of delay in arriving at a diagnosis; cols. and 16 with the use made of sputum examinations id X rays. Col. 17 gives a measure of the coöperation tween tuberculosis officers and general practitioners, id cols. 18 and 19 of the amount of supervision given tuberculous patients in their homes. Cols. 20 and provide striking evidence in some cases of the ilure to carry out the provisions for domiciliary eatment by insurance practitioners. Cols. 22 to 46 al with residential treatment, and it is suggested at a study of cols. 31 to 38 may help to secure a ore economical use of available residential accom- odation. A superficial glance through the long sts of figures shows an extraordinary discrepancy tween one district and another which would appear indicate a great variation in methods.

We suggest that when the next analysis is issued it ould add to the interest if two more columns were dded, one to show the cost of each scheme, say, per 000 of the population, or, perhaps preferably, per 0 deaths from tuberculosis (as the Ministry pays a per cent. grant this figure is readily available), and e other to show the percentage reduction in the ath-rate from tuberculosis in each district during, y, the last ten years. The acid test of the efficiency the schemes is "Are they delivering the goods?"

Name of town.	Taken from Sheffield report for 1926.	Taken from the Ministry of Health analysis for 1926. All the numbers are per 100 deaths from tuberculosis.			
	Percentage reduction in tuberculosis death-rate—1917–26.	"New" cases examined by tuberculosis officers.	"Contacts" examined by tuberculosis officers.	Hospital beds available.	Patients treated in hospitals.
ortsmouth	52·4	227	31	39	89
heffield ..	49·8	688	287	114	381
lymouth ..	47·7	231	390	73	146
eicester ..	33·3	249	30	61	178
ewcastle-upon-tyne	32·3	223	17	42	99
alford ..	27·6	175	142	47	150

The Ministry attaches great importance to the use the dispensary for consulting purposes and to the xamination of contacts. We have before us a table the Sheffield health report for 1926 which shows the percentage reduction of the tuberculosis death-rate during the last ten years in the county boroughs of England and Wales with populations over 200,000. The three towns with the largest reductions are Portsmouth, Sheffield, and Plymouth, and the three with the smallest Leicester, Newcastle, and Salford. The above table shows how these six towns compare as regards the examination of new cases and contacts at the tuberculosis dispensary and the provision and use of hospital beds. It also gives an illustration of the discrepancy alluded to above.

A Squabble about Scarlet Fever.

A discussion which arose last month in the council of a Midland rural district has some general interest. According to the report which we have seen one or more of those present suggested that there was some doubt whether a case of scarlet fever reported by the medical officer really was that complaint at all, though the patient had been removed to hospital on the family doctor's instructions. The chairman remarked that it was a serious matter for a patient to be in hospital for six weeks at a cost to the district of 18 guineas if there were any doubt about his complaint. It was then recalled that on the occasion of a previous dispute the medical officer had declined to visit the cases of his brother practitioners because it would be a breach of professional etiquette for him to do so. A councillor, defending the action of the medical officer, stated that the Ministry of Health had laid it down that a medical officer should not be required to visit the cases of another practitioner. To this the reply was made that the Ministry's ruling was that while a medical officer could not be expected to visit every case of infectious disease it was advisable for him to do so when it was a question of diphtheria or scarlet fever, but this was a matter for each sanitary authority to decide for itself. It is doubtful whether such a deduction could be made from the paragraph relating to infectious diseases in the latest memorandum on the Duties of Medical Officers of Health in England and Wales (using its short title). This paragraph contains the following passage:—

"On being informed of the *outbreak* of any infectious or epidemic disease of a dangerous or unusual character within the district it is essential that he should visit the spot at once in order to inquire into the causes and circumstances of the outbreak and to take such measures for the prevention of disease as he is legally authorised to take under any Statute or Regulation in force in the district. He should also investigate any doubtful or suspected cases of dangerous infectious disease of which he learns. If in any case he is not satisfied that all due precautions are being taken he will, of course, advise the persons competent to act as to the measures which appear to him to be required to prevent the extension of the disease.

"In conducting such investigations a medical officer of health will bear in mind that the examination of patients in their own homes can be made only with the consent of the patient or of those in charge of the patient. If a medical practitioner is in attendance his coöperation should always be sought."

For administrative purposes an *outbreak* may be taken to mean several cases apparently arising from a common source; scarlet fever is, of course, included in the legal definition of infectious disease of a dangerous character. Seeing that rural areas are the places where the milk-supply of towns is produced the medical officer will always bear in mind the possibility of infection of the milk; to secure the early diagnosis and isolation of any person suffering from an infectious disease transmissible by milk and so situated as to be likely to infect the milk is a matter of importance, not only to the rural community, but also to the various urban communities supplied. The Ministry will therefore expect the medical officer to satisfy himself as to the nature of any doubtful or suspected cases of dangerous infectious disease. Where he is a whole-time official there is but little danger of his visit to a patient affecting the practitioner's interest adversely. Where he is not the care of the public health is still the first consideration.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED JAN. 28TH, 1928.

Notifications.—The following cases of infectious disease were notified during the week :—Small-pox, 370 (last week 405) ; scarlet fever, 1981 ; diphtheria, 1644 ; enteric fever, 64 ; pneumonia, 1409 ; puerperal fever, 48 ; puerperal pyrexia, 110 ; cerebro-spinal fever, 9 ; acute poliomyelitis, 13 ; acute polio-encephalitis, 4 ; encephalitis lethargica, 27 ; dysentery, 3 ; ophthalmia neonatorum, 112. There was no case of cholera, plague, or typhus fever notified during the week.

The cases of small-pox were notified from the following 24 counties :—London 4 (Southwark), Bedford 8 (Bedford), Derby 12, Durham 72, Gloucester 3 (Bristol 2), Hertford 2 (Barnet), Lancaster 25, Leicester 1 (Hinckley), Lincoln, Parts of Kesteven 1, Parts of Lindsey 2, Middlesex 1 (Uxbridge), Northampton 1 (C.B.), Northumberland 14, Nottingham 24, Salop 1 (Drayton R.D.), Southampton 1 (Hartley Wintney R.D.), Stafford 1 (Burton-on-Trent), Surrey 2 (Chertsey, Guildford), Sussex East 2 (Hastings, Cuckfield), Sussex West 1 (Worthing), Warwick 29, (Birmingham 17), Yorks North Riding 19 (Middlesbrough 11), West Riding 57, Glamorgan 24, Monmouth 63.

The number of patients at the Infectious Hospitals of the Metropolitan Asylums Board on Jan. 31st–Feb. 1st was as follows :—Small-pox 10, scarlet fever 1776, diphtheria 2559, enteric fever 22, measles 1308, whooping-cough 161, puerperal fever 17 (plus 14 babies), encephalitis lethargica 70, poliomyelitis 2, " other diseases " 48. At St. Margaret's Hospital there were 11 cases of marasmus and 16 babies with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns, including London, there were 2 (0) deaths from small-pox, 1 (1) from enteric fever, 102 (49) from measles, 4 (0) from scarlet fever, 31 (4) from whooping-cough, 34 (6) from diphtheria, 39 (5) from diarrhœa and enteritis under two years, and 96 (24) from influenza. The figures in parentheses are those for London itself. The 2 deaths from small-pox belonged to Bradford C.B. (See note last week.) Of the 53 fatal cases of measles outside London, 13 were reported from Manchester, 11 from Bristol, 4 from Derby, and 3 from Brighton, while the figures from Glasgow and Dublin for the same week were 33 and 10 respectively. The number of stillbirths registered during the week was 296 in the great towns, including 51 in London.

JOINT TUBERCULOSIS COUNCIL.—At a council meeting held at the House of the Society of Medical Officers of Health on Jan. 21st Sir Henry Gauvain was elected chairman for 1928, Dr. Lissant Cox vice-chairman, Dr. E. Ward hon. secretary, and Dr. J. Watt hon. treasurer, the other members being Dr. S. Roodhouse Gloyne, Dr. A. Neville Cox, Dr. L. S. T. Burrell, Dr. Peter Edwards, and Dr. Jane Walker. Dr. W. Brand reported that 29 persons had attended the course of post-graduate study at Victoria Park Hospital. Future courses had been planned as follow : In June next a course at Alton in surgical tuberculosis ; in July a course at Papworth and Cambridge with the coöperation of Sir Humphry Rolleston, Dr. P. C. Varrier-Jones, and Dr. Louis Cobbett ; in October a probable course at Edinburgh. At a luncheon following the meeting there were present as guests Sir Robert Philip (President of the B.M.A.), Sir StClair Thomson (President of the Tuberculosis Society), Dr. Rufenacht Walters (President of the Society of Superintendents of Tuberculosis Institutions), and Mr. G. Elliston (secretary, Society of Medical Officers of Health). Sir George Newman delivered a short address to tuberculosis workers in which he expressed his belief that the fight against tuberculosis was being won, the dispensary system being the winning factor. He believed that in turn and in this order we should defeat tuberculosis, rheumatism, syphilis, and cancer. The four mainstays in the tuberculosis campaign were : (1) Notification, which brought the practitioner into touch with the tuberculosis service. (2) The dispensary. He noticed that in some districts the sputum examinations were too few (at least three should be made in every negative case) ; in other instances X rays were not sufficiently utilised. (3) The sanatorium, the success of which depended on fresh air, moderate and controlled exercise, employment, and good food. The need at sanatoriums was for a greater study of the requirements of individual cases. (4) After-care. In this the practitioner and after-care organisations each played an important rôle. Our ideal should be sooner or later to make possible for everyone the sanatorium conditions of life as regards housing, exercise in the fresh air, and good food.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Lt. G. S. Rutherford to be Surg. Lt. Comdr.

ROYAL NAVAL VOLUNTEER RESERVE.

Lt.-Comdr. H. C. Hedderwick is placed on the Retd. Lis
Surg.-Comdr. F. H. Watson is placed on the Retd. Lis

ROYAL ARMY MEDICAL CORPS.

Majs. F. B. Dalgliesh (and is granted the rank of Lt.-Col and C. M. Rigby retire on retd. pay.
Capt. T. C. Bowie to be Maj.
Capts. to be Temp. Capts. and temporarily relinquis the rank of Capt. : B. D. Merrin and J. B. Woodrow.
Temp. Lt. I. MacW. Bourke relinquishes his commn.

ARMY DENTAL CORPS.

R. W. Mather to be Lt. on probation.

TERRITORIAL ARMY.

Maj. (Prov.) A. H. Fullerton is confirmed in his rank.
Capt. W. Lumley, late R.A.M.C., to be Capt.
Lt. F. N. Foster to be Capt.

TERRITORIAL ARMY RESERVE OF OFFICERS.

Lt.-Col. J. B. Jamieson, having attained the age-limit, retd. and retains his rank with permission to wear th prescribed uniform.
Maj. J. A. Davies, having attained the age-limit, is ret and retains his rank with permission to wear the prescribe uniform.
Capt. B. Holroyd, having attained the age-limit, relir quishes his commn. and retains his rank.

ROYAL AIR FORCE.

Flying Officer Neil Innes Smith is promoted to the ran of Flight Lieutenant.
Flight Lts. J. J. Clarke and B. Pollard are transferred t the Reserve, Class Dii.

RESERVE OF AIR FORCE OFFICERS.

Flight Lt. G. R. Nodwell is transferred from Class Di to Di

The King has approved of the award of the Royal Nav Volunteer Reserve Officers' Decoration on Surg.-Comdrs T. Turner and A. E. W. Hird.

THE LATE LIEUT.-COL. ROBERT TILBURY BROWN

Sir Patrick Hehir, under whom Tilbury Brown serve for 21 months (1911–13) as D.A.D.M.S. (Sanitary), Burm Division, sends us the following appreciation. An obitua notice appeared in THE LANCET of Jan. 28th, p. 207.

" He was," writes Sir Patrick Hehir, " the best practic military sanitarian that I have known. I looked on him as born sanitary officer. We were twice on division manœuvres together, once in the Northern Shan Hills ar once on the banks of the Taiping River on the borders China, both in bamboo country. In the former we we encamped on the edge of a swamp with trickling strean from rice-fields as seemingly our only source of water-suppl In a few hours he found a spring on high ground and in half-hour bamboos raised on bamboo stanchions brought th water to our 400-gallon iron tanks in which it was chlorinate On the banks of the Taiping (our headquarters for the tin being) he created one of the most beautiful and sanita camps I have ever seen ; nothing was left unthought c He had remarkable sanitary intuition and a genius f detail, and, being a good draughtsman, worked out h schemes on paper in a few minutes and then saw the carried out. During the time we worked together in Burm mainly through his personal exertions and talent, the deat rate in the Burma Division was reduced 50 per cent. ar the malaria-rate 74 per cent. In Burma he repeated suffered from gastro-intestinal trouble and at one time were afraid that he was suffering from sprue. I ascertain from many senior officers who were with him in East Afri that he did most laudable work there under exceptional severe circumstances in a trying climate. Besides being a excellent sanitarian he was a sound physician and a goo bacteriologist. He was a good companion and a mo loyal man to work with."

SOUTHWARK GENERAL LYING-IN HOSPITAL.—Th hospital is appealing for £40,000 to rebuild the out-patient department and the nurses' quarters. Last year there we 36,000 attendances in the antenatal, postnatal, and dent clinics, and there was not a single death among mothers children. There is said to have been no appeal on behalf the institution since 1765, the year of its establishmer when Garrick gave benefit performances at Drury-lane.

Correspondence.

"Audi alteram partem."

MOTOR-CAR ACCIDENTS AND HOSPITALS.

To the Editor of THE LANCET.

SIR,—In your issue of Oct. 22nd last you kindly published a letter from me asking for details of motor accidents treated at hospitals throughout the country. Figures reached me from 183 hospitals, representing 1169 beds (rather less than one-third of the total available beds) and it appears that the cost to the hospitals of the country, irrespective of any fees to medical men, must be in the region of half a million pounds sterling annually. The financial burden placed upon the hospitals is unbearable, and in other respects almost unbelievable. For instance, I find that in many small hospitals the medical officers have been impelled, as the week-end approaches, to hasten the discharge of in-patients, most of whom are local accidents for whom the hospital was founded, in order to have beds ready for motorists from "foreign parts."

The Hospitals Motor Accident Policy Association, of which I am chairman, have placed these statistics before various insurance experts, and I am glad to say that in a very public-spirited manner the Eagle Star and British Dominions Insurance Company, Limited, have established a policy, which for the moderate premium of 5*s.* guarantees to the hospital a payment of 10*s.* 6*d.* per day up to 30 days should the insured be admitted into the hospital as the result of an accident caused by any moving public or private motor, electric, or horse-drawn vehicle, together with a payment of 3 guineas for medical fees, which is increased to 5 guineas should the patient be detained beyond seven days. In the case of patients dealt with in the casualty department and not admitted, the payment is 10*s.* 6*d.* to the hospital and 10*s.* 6*d.* to the medical officer. Whilst greatly appreciating the action of the Eagle Star Insurance, this Association is not satisfied that the position has been adequately dealt with, but they feel that a start has been made to lighten the burden which the hospitals have been obliged by circumstances to shoulder, and they trust that further experience may enable them to secure even better provision.

Every motorist carries a map and every motorist should have an M.A.P. (Motor Accident Policy); so also should the "man in the street," and the patron of the motor-bus and taxicab. These policies will be ready for issue this week, and I am asked to suggest that intending holders should make their cheque in the form of a banker's order to be paid annually. They will thus avoid personal inconvenience and all something like 5 per cent. to the amount available for distribution amongst the hospitals. The cheque should be made out in this way:—

"Pay now and annually on this date to the Eagle Star Insurance, 1, Threadneedle-street, E.C., the sum of £ ."

(and please write plainly) and send it to the Hospitals Motor Accident Policy Association, 6, Duke-street, Adelphi, W.C.

One interesting feature is that a motor owner may take a policy for each seat in his car. Another feature, important for motor cyclists, is that on account of the risk the company can only pay half benefit in respect of motor cyclists and sidecars; motor cyclists are therefore urged to take two policies for each seat, which will give them full cover.

I am, Sir, yours faithfully,

H. W. BURLEIGH,
Chairman, Hospitals Motor Accident Policy Association.

Feb. 4th, 1928.

FATALITY-RATES OF SMALL-POX IN THE VACCINATED AND UNVACCINATED.

To the Editor of THE LANCET.

SIR,—Dr. Garrow's figures are based upon the fallacy of comparing statistical incommensurables. As he must know well, there have been two distinct types of small-pox occurring in England during the last few years; the vast majority have occurred in the unvaccinated populations of the Northern and Midland counties, and were of the mild type—variola minor, if he likes so to term it—whilst a very small number of a severe type—variola major—have occurred in the south of England, due to infection introduced from France, Spain, &c. This distinction is not apparent in the tables published in the annual reports of the chief medical officer to the Ministry of Health, though doubtless the necessary information is available at the Ministry. By comparing the information in these tables, from which he quotes, with the accompanying text, and with the figures given in Table XL. of the Annual Statistical Reviews of the Registrar-General, I have been able to identify nearly all the deaths. In this manner I obtain the following table of deaths in England during the years 1923 to 1926:—

Age.	Vaccinated.	Unvaccinated.
Under 15 ..	0	17 (probably all northern)
15 to 30 ..	1 (? northern)	2 (1 northern, 1 southern)
Over 30 ..	12 (3 northern, 9 southern)	2 (1 northern, 1 not identified)
Total ..	13	21

By "northern" is meant the northern and midland counties as defined by the footnote to Table IV. of the Registrar-General's statistical reviews, less Middlesex, Herts, and Essex, the remainder being the southern counties.

Assuming, then, that all the deaths in the southern counties were deaths from variola major, we may deduct them from the total deaths; this assumption is quite valid, as these deaths can be identified from the text; identification of the cases is not easy, but as those occurring in the south of England were very few—about 80—they may be neglected statistically. The amended table is as follows:—

Ages.	Vaccinated.			Unvaccinated.		
	Cases.	Deaths.	Fatality-rate.	Cases.	Deaths.	Fatality-rate.
0–15 ..	28	0	—	10,709	17*	0·158 ±0·026
15–30 ..	392	1	0·25 ±0·17	5,296	1	0·019 ±0·013
30 and over	3,618	3	0·08 ±0·03	1,713	2	0·117 ±0·070
Total ..	4,038	4	0·10	17,718	20	0·112

* 10 were under 1 year old.

These figures are probably accurate as far as they go, except that the small number of cases of variola major in the southern counties are included; the table gives the fatality-rates from mild small-pox in the vaccinated and unvaccinated, the advantage being in favour of the vaccinated, except at ages 15 to 30 years, where, the rates being based on a single death in each class, no deduction is possible from such meagre data. The probable error in all classes, except the youngest class of unvaccinated, is very high. Even when corrected there is a further fallacy as two of the three deaths among the vaccinated at ages over 30 years were of persons aged over 70, whilst only one death at those ages occurred among the unvaccinated. It is well known that small-pox fatality rises steeply in the later years of life. The data do not form a basis of comparison for the fatality-rates in variola major among the vaccinated

and unvaccinated, but this may be ascertained from the data of other epidemics—e.g., those given in Table II. of Dr. W. Hanna's "Studies in Small-pox and Vaccination," published in 1913.

I am, Sir, yours faithfully,

C. O. STALLYBRASS.

Public Health Department, Liverpool, Feb. 6th, 1928.

THE PRESENT POSITION OF THE VOLUNTARY HOSPITALS.

To the Editor of THE LANCET.

SIR,—Prof. Hey Groves, in your issue of Feb. 4th, arrives at a conclusion in favour of State control of hospital services by omitting consideration of fundamental principles which inspire individuals to voluntary effort. Ultimately the voluntary system of hospital management rests upon the desire of a multitude of individuals, at the head of which are the groups of men having knowledge of business, in this country commonly known as boards of governors, in the United States as boards of trustees. The whole of Prof. Hey Groves's list of arguments is rendered fallacious because he seems only to consider the voluntary work of physicians and surgeons—quite apart from the question how far that work can be called purely voluntary, the chief distinction is the freedom of the individual, unfettered by bureaucratic limitations, to apply his special talent to the improvement in treatment of the particular cases which happen to come under his care. Of far more importance in the voluntary system are the men of business, who give up a large amount of time, not "an occasional hour," to the control whether of single institutions or in coördinating the activity of many. It is these boards of governors—boards of trustees—who are the centre of the voluntary system. It is to them that gifts, small or great, are entrusted; it is to them that large sums are given without conditions by the donor during his lifetime. To them there are made bequests without such conditions as the future might render onerous.

Prof. Hey Groves, not in one passage only, shows that he is out of sympathy with boards of governors and such-like bodies in his own city. Moreover, his information is partial, derived too exclusively from medical men in the United States, which ignores all that is there of primary importance, the management of the hospitals by boards of trustees. His commencement gives his case away. It is based on the support of "very many medical men, who have given it their support and by the very few who have come forward to defend the voluntary system." He proceeds to beg the question—"Already the purely voluntary system has disappeared." That may be a truism—"In the original meaning of the term the voluntary system is already dead." That is the reverse of a truism. The voluntary principle is working more actively than ever, whether here or where Prof. Hey Groves seeks for support, in America. What is needed is better coördination with the State and municipalities.

That the voluntary system is out-distanced by more progressive countries is a statement of opinion which can be countered by a close inquiry among the actual patients in hospitals. It is sufficient for this country to point to the long waiting-lists at the voluntary hospitals on the one hand, and, on the other, to the empty beds in the buildings which Prof. Hey Groves so much admires. He drags in the question of the middle classes, again a matter for coördination, the closer association of nursing homes with the voluntary hospitals, schemes for sick insurance, &c.

Some of Prof. Hey Groves's remarks concerning recent history are strange. One great success of the Army Hospital System during the late war was the atmosphere brought in by the medical staffs and nurses from the voluntary hospitals, which both expanded and relaxed the rigidity pre-existing under military traditions. In his reference to nursing and Miss Nightingale, he forgets the truly English system of nursing developed by the voluntary work of William Rathbone and Sister Agnes Jones in Liverpool. He says much research. There is research in which the investigat plunges into the mist of the unknown, and produc print and figures as part of the requirements of salaried post. There is also research by one servi at a voluntary hospital, with freedom to study sor peculiarity of a special case, and perhaps thereby add one more stepping-stone for the crossing of river hindering progress.

Dr. Graham Little and I, in a communication the *Times*, have suggested conferences, particular between those mentioned above, who are acquaint with the business side of voluntary hospitals, a those of municipal hospitals, such as we know connexion with King Edward's Hospital Fund a the University of London, so far as concerns t metropolitan area. There are similarly active bod of men in municipal and county areas. The obj of such conferences may be achieved by the establis ment of "advisory councils for hospital service On such councils we rather count physicians a surgeons as among those to be called upon for spec advice. We suggest a way by which further develo ments of voluntary effort and freedom of resear may be coördinated with State and municipal expen ture. Individual effort will be encouraged; outl derived from rates and taxes restricted. It is solution of a practical kind, whereas the propo made by Prof. Hey Groves is an impossible o the burden on the tax and ratepayer would be p hibitive in amount. The "essentials of a go hospital system" (pace Prof. Hey Groves) can summed up in one word—coördination.

I am, Sir, yours faithfully,

London, Feb. 6th, 1928. WALTER G. SPENCER.

To the Editor of THE LANCET.

SIR,—Prof. Hey Groves and I obviously stimul each other to a renewed conviction that our o views are correct, and we must therefore, I thi agree in all friendliness to differ. In his latest arti however, I think I can detect certain inconsistencie a detection which I hope will convert some reader my point of view. The issue surely is a simple c much simpler than Prof. Hey Groves describes it. is whether all our hospitals shall in future be mana by public authorities or whether those which are n under private management shall continue to be administered. Both systems of management—(1) public authorities, (2) by private administration—h been tried out in our country and have resulted in very different types of institution, the "voluntar hospital and the municipal or poor-law hospital. estimation in which these two types are at the mom relatively held must surely be taken as some indicat of the value of these two systems compared with e other. Prof. Hey Groves's conception of the volunt hospital is tinged with prejudice and does not corre represent the facts. For example, is it really the c as he states, that the acceptance by the volunt hospitals of the Parliamentary grant of £500,0 made immediately after the war to recoup the hospi in some small measure for the sacrifices which t increased services to the State during the war entai is "a violation of voluntary principles?" I pur to expose some of Prof. Hey Groves's inconsisten by the mere juxtaposition of statements made by Prof. Hey Groves writes that "one of the essent of the voluntary system" is that "it is a cha bestowed by the rich upon the poor." A little l he cites as one of the most important charges aga the voluntary system the fact that "it has faile meet the growing need of the middle classes." apparently sees no incongruity between these statements! The voluntary hospital by its nature has not yet been expected to deal with middle classes. It is the changed position of t classes, of recent development which calls for help hitherto required. Again, in his summary he st that "an efficient hospital system" would call "effective fusion, coördination, or coöperation betw all hospitals of every kind and variety in given a

s fusion must be under the control of the Ministry Health." Immediately succeeding this pronounce- it he declares that another essential of an efficient pital service is that "there should be State aid out State control." I submit that these two ements are destructive of each other, unless he some ingenious quibble to show that control by Ministry of Health is not State control.

nasmuch as the title "voluntary" seems to be able of ambiguity it might be preferable to use the d "independent," which would emphasise the linal principle for which the upholders of the ntary system are contending—namely, manage- t of hospitals by bodies essentially independent of State or municipality. Prof. Hey Groves seems e somewhat confused on this point, and perhaps nd I are in effect in more essential agreement in views than appears on the surface, for as I wrote our issue of Jan. 21st, it is the voluntary (or pendent) system of management which I am erned to maintain, and not so much the system oluntary contributions. That system of manage- t entails, I think, a very large measure of "free ical service," which is one of the five qualities uded by Prof. Hey Groves in his enumeration of essentials of the voluntary system. A corollary his freedom is a staff preponderantly officered by ons not paid for their professional services and con- iently preserving complete personal independence. harles Lamb, spending an evening with a party Scotsmen, expressed the amiable wish that their onal poet Burns could drop in, whereupon of the company rose as one man to point out that was impossible, as Burns was dead. Prof. Hey ves must, I think, be a lineal descendant of these Scotsmen. I wrote: "We owe it to the voluntary pitals that Sairey Gamp has been finally displaced Florence Nightingale." I fondly imagined that was a terse and picturesque way of saying that the dard of nursing in England had improved since kens created his famous character, and that the provement was due to the training initiated and ected by the voluntary hospitals. Prof. Hey ves construes my script literally; he recites with essorial prolixity the biography of Florence htingale, to show that she received much of her ning abroad, not in voluntary hospitals, and he mnly rebukes me for being "inaccurate and leading" in making the statement quoted!

rof. Hey Groves writes under his list of "failures he voluntary system" the following sentence: ost important of all, it has utterly failed to dinate the hospital services necessary for the munity." I would venture to refer him to the cles in the *Times* of Jan. 10th and 11th, contributed Mr. Walter Spencer and myself, in which we onstrated that a very large measure of coöperation veen hospital services in certain areas has in fact n silently accomplished by the voluntary hospitals ng the lead which their outstanding prestige has eded them, in coöperative schemes for medical ices within their area of operation, but I freely it that this coöperation has been imperfect and some ways haphazard, and Mr. Spencer and I gested a scheme for the future which would preserve them a management essentially independent of the State (upon the analogy, which we cited, of the versities), while ensuring a larger measure of dination between hospital services.

rof. Hey Groves conveniently ignores the question the comparative cost of the two systems of nagement. Sir William Collins,[1] writing with the complete municipal and Parliamentary know- e derived from his position as Chairman of the L.C. and Chairman of Committees of the House of Commons, specifically stated in 1912 that—

> if the hundred odd voluntary hospitals of London were on the rates and staffed and managed after the fashion, of the Metropolitan Asylums Board institutions, it ld mean a new charge of something like 8*d.* in the id on the rates."

[1] Hospitals and the State. Harrison and Sons. 1912.

Inasmuch as his estimate was made in 1912 it is obvious that the figure would now be practically doubled, that being the ratio in which the cost of all hospital services has increased since 1913. My contention in my address in your issue of Dec. 17th was that we could not indefinitely go on piling up the burdens upon our ratepayers, already the most heavily taxed in the world; that economical use of our scanty resources was the crying need of our time. One of my paragraphs on this subject is as follows:—

> "The administration of the voluntary system is incomparably cheaper, because it is voluntary, than any State-controlled system could be. Moreover, the purposes to which money under State control would be applied would probably not be the same as those upon which voluntary hospitals are concentrated. They would be inferior purposes in every case, and the waste of money consequently would be even more disastrous than the actual expenditure would indicate."

This economic aspect, I submit, is of cardinal importance, and it is a comfort to me personally to reflect that economic considerations alone will in all probability effectively block for this generation at least what I submit would be the extremely wasteful substitution of State management for independent management of hospitals. I cannot envisage the political party which will be anxious to add a rate of something like 1*s.* 4*d.* in the pound in order to transform the highly popular voluntary hospital into a copy of the highly unpopular poor-law infirmary.

Dr. J. C. Muir, in his letter in your issue of Jan. 28th, has dropped a much larger brick than he is aware of. The statement that there are hundreds of permanently empty beds in the poor-law infirmaries was not, as he assumes, my own invention, but was reproduced from a recent speech made by the Minister of Health, whom Dr. Muir can hardly charge as he charges me with knowing nothing about the subject. Perhaps Dr. Muir would not have been quite so derisive of this statement had he recognised its origin.

I accepted Dr. Muir's possibly exaggerated estimate of the waiting-lists at voluntary hospitals out of compliment to him, and because the congestion which he described supported my argument as to the relative popularity with patients of the voluntary hospitals as compared with other institutions. The voluntary hospitals would welcome some relief from this congestion, and I am in agreement with Dr. Muir in thinking that when the poor-law hospitals come under the new management proposed for them and secure an improved personnel, and consequently an improvement of prestige, they will go some way towards solving the problem of dealing with redundant patients. But I was describing things as they are and not as they promise to be. In this connexion the letter which immediately follows Dr. Muir's in your issue of the 28th ult. amply corroborates my picture of the poor-law institution of the present day. Dr. Muir overlooks the very pertinent circumstance which I pointed out in my address, that the voluntary hospitals are in fact expanding with somewhat remarkable rapidity to meet the demands made upon them. In London alone in 1924 1600 beds were added to those hospitals which come under the King's Fund, and another 1200 beds in 1926, and expansion is continually in progress at nearly all the voluntary hospitals in London.

I am a medical man in full hospital and private practice who happens also to be a Member of Parliament, and I have tried as far as I have been able to act as a "Member for Medicine," which is very inadequately represented in the House of Commons. If Dr. Muir chooses to call me a politician I do not mind, but I suspect him of choosing this appellation in order to accuse me of a lack of political sagacity because I described with Mr. Spencer a system of voluntary management of hospitals in London which does not suit Dr. Muir. I am content to pit against Dr. Muir's political insight and knowledge the political insight and knowledge of the leader writer in the *Times* of Jan. 11th, who, commenting on this scheme suggested by Mr. Spencer and myself, wrote so favourably of it.—I am, Sir, yours faithfully,

Feb. 6th, 1928. E. GRAHAM LITTLE.

RECURRENT COLDS.

To the Editor of THE LANCET.

SIR,—The correspondence in your issue of Dec. 31st, 1927, on this undignified indisposition will prove exceedingly helpful. Recently, however, I have been able to dispense with many of the usual efforts, including what Dr. Graham-Stewart designates the religious use of the spray. I sacrilegiously (I will not say irreligiously) employ one of the symmetrical ureas as advocated by his neighbour, Mr. J. E. R. McDonagh. Exit the sneeze.

I am, Sir, yours faithfully,

Calif., U.S.A., Jan. 18th, 1928. A. L. GRANT.

TREATMENT OF THE MALARIAS.

To the Editor of THE LANCET.

SIR,—Referring to Dr. Carmichael Low's letter in your last issue the difficulty in the treatment of subtertian malaria up to the present time has been the elimination of the crescent from the body. The fact is that there is no known drug which destroys the crescents so effectively and in so short a time as does plasmochin and plasmochin-compound. This is the main point which has been substantiated by a number of workers. As it has been shown that quinine acts directly upon the schizonts of the subtertian parasite and plasmochin upon the crescents, the combination of these two drugs, in Dr. Low's own words, "will act better than either given alone." Dr. Low's parallel between the goose, golden eggs, and the affinity of quinine for the immature stages of the crescent in the blood stream is, in the present state of our knowledge, an incomplete ornithological simile. With further experience of plasmochin-compound and comparison of control cases Dr. Low will, I trust, see reasons for amending his rather pessimistic attitude to what may prove to be a distinct therapeutic advance in the treatment of a particularly intractable malady.—I am, Sir, yours faithfully,

Feb. 6th. PHILIP MANSON-BAHR, M.D., F.R.C.P.

"FRIGHT DISEASE."

To the Editor of THE LANCET.

SIR,—In your annotation on this condition in dogs, a certain measure of scientific caution is most properly apparent. Nor am I ignorant of what class step in where angels fear to tread. Nevertheless, I would venture to take exception to the statement that "so far as can be judged, the disease seems to be peculiar to dogs . . . nothing identical has been observed in any other species of domesticated animal." Amongst the domesticated animals man himself takes the place of honour, and should not be excluded from the survey. It is true that he does not on small provocation rush about and dash himself against trees—although even of that a typical record may be found in the works of Lafcadio Hearne. But this rushing about, this excessive freedom, cannot be the whole disease. It is known to be infectious to a high degree, and those who look closely enough may often chance on prodromata and sequelæ. Only this day have I seen a valuable dog dying of what in a human being we should call encephalitis lethargica. A week or two ago he had typical fright symptoms and shortly before that a febrile attack. Also, it is well known that in a large kennel affected with encephalitis there are often some cases of the fright disease.

This encephalitis in dogs has been very frequent of late, and a year ago in this district there was a case in which not only the canine members of a domestic circle, but two of the adults, were affected with similar symptoms. All died quickly, except one, who developed Parkinsonism. Such instances, even if isolated and atypical, give one furiously to think. I would at least plead that this fright disease be regarded as possibly only a very small part of a much more serious picture, a picture from which man himself is not excluded.

I am, Sir, yours faithfully,

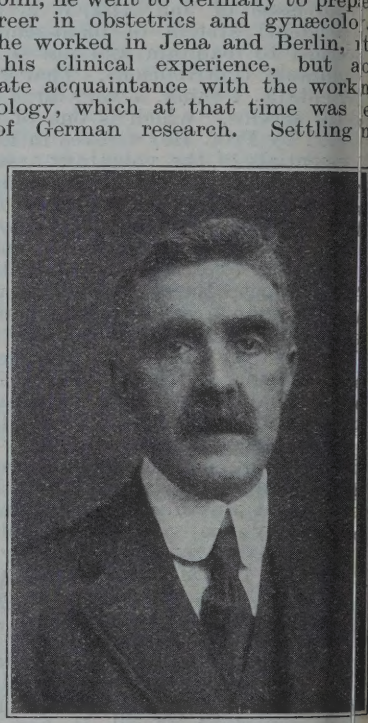
Sevenoaks, Kent, Feb. 3rd, 1928. GORDON WARD.

Obituary.

GEORGE BALFOUR MARSHALL, M.D. EDIN. F.R.F.P.S. GLASG.

WE regret to record the death of Prof. Balfo Marshall, consulting gynæcologist to the Glasg Royal Infirmary, which occurred on Jan. 31st, a nursing home in Glasgow, in the sixty-fifth year his age.

George Balfour Marshall was born on June 17 1863, in Edinburgh, where his family had play for very many years, an important part in busin and municipal affairs. After a distinguished und graduate career in the University, a term of duty house surgeon in the Royal Maternity Hospital the and a spell in Dublin, he went to Germany to prep himself for a career in obstetrics and gynæcolo For three years he worked in Jena and Berlin, only extending his clinical experience, but a gaining an intimate acquaintance with the work pathological histology, which at that time was favourite field of German research. Settling Glasgow in 1893, he commenced practice in his specialty, graduated M.D. of Edinburgh, and was admitted a Fellow of the Royal Faculty of Physicians and Surgeons, Glasgow, in the following year. He became attached to the gynæcological staff of Glasgow Royal Infirmary, and, eventually, in 1907, was appointed to the charge of the wards vacated by the late Dr. Kelly. He continued to give loyal and valuable service to the Infirmary until his retirement in 1923. His hospital association brought him into close con with the Extra-Mural Medical School in Glasg and he was one of its most popular teach for years his classroom in the old Western Med School at the University Gate was crowded w enthusiastic students. This experience he to refer to as one of the happiest of his memo For many years he lectured in gynæcology St. Mungo's College, and on the retiral of Dr. Ro Jardine in 1921, was appointed to the Chair Midwifery there. He was a most attractive lectu vigorous in expressing his opinions to students, always ready with a pawky wit to stimulate the lagg or silence the boisterous. His lectures in the Wes Medical School formed the basis of the excel "Manual of Obstetrics," which he published in 1 Indeed, to the literature of his subject he made m contributions, characterised by careful observa and sound judgment. Accuracy and restraint the special features of all his work, written or formed.



PROF. BALFOUR MARSHALL.

Photograph by T. & R. Annan, Gl

The family tradition of public service was ca on by Dr. Marshall in many directions. He wo valiantly to establish and consolidate the Me and Dental Defence Union of Scotland, and was of its most trusted councillors. For several y

represented the Royal Faculty of Physicians and rgeons on the directorate of the Glasgow Royal aternity and Women's Hospital, to the acceptance ike of patients, students, and staff. He was a ithful supporter of the local Obstetrical and Gynæcoical Society and graduated through all its offices the presidency. He was appointed by the Privy uncil to be the Government visitor under the rmacy Act, and it was characteristic of the man at, though this work was so far removed from his rn, he took pains to master every detail of it. careful surgeon, no detail was too trifling for his tention, and his theatre work was a demonstration calm dexterity. His widespread interests made him delightful companion, and his caustic wit added zest to his conversation. A loyal friend and helpful lleague, he was always ready to advise and courage his juniors. To all he was the embodiment courtesy, and he was one of the most modest of en. He had a great love for his country, and rticularly for the north-west Highlands, where was able not only to gratify his cult of the d and the fly, but to secure the camera films which spent the winter in perfecting. So recently as st autumn he won a first prize at one of the great hibitions of photography.

For several years Dr. Marshall had suffered from tarrhal chest conditions; while he coughed, he uld declare that no Edinburgh man could stand e sooty atmosphere of Glasgow. Recently he d been less fit than usual, but he carried on his ties bravely, and ten days before his death lectured th his usual sparkle to his class at St. Mungo's llege. On the following day he was taken ill ddenly, and was operated upon on the same afterion for an intestinal perforation; but a more sperate lesion was found lower in the bowel, and passed peacefully away on the morning of n. 31st. He had lived a full and useful life, and s death will be deeply felt not only by the medical cognised his worth. Last year Dr. Marshall ofession, but by the whole city, whose inhabitants lebrated his silver wedding, and he leaves a widow d three children.

Medical News.

ROYAL COLLEGES OF PHYSICIANS AND SURGEONS ENGLAND.—At the Final Examination of the Conjoint ard held from Jan. 10th to 31st the following candidates re approved in the undermentioned subjects, but are not gible for diplomas:—

Medicine.—R. E. Artrick, Univ. Coll.; Mabel A. Baker, Royal Free; G. N. Beeston, Charing Cross; S. Behrman, St. Bart.'s; S. P. Bhatia, St. Thomas's; C. H. Birt, Birmingham; J. R. Bond, Univ. Coll.; M. T. Brockman, Guy's; Nellie Brown, Westminster; J. M. Buchanan, Melbourne and Middlesex; G. Campbell, St. Thomas's; T. H. Carr, Leeds; J. E. Crooks, Guy's; H. S. Davies, King's Coll.; P. Dickman, Charing Cross; R. C. Dracup, Bombay and St. Thomas's; C. Emery, Univ. Coll.; Marguerite M. Fenn, Royal Free; Cecilia F. Fox, Bristol; H. N. W. Harley, Guy's; Kathleen M. Henderson, Royal Free; J. S. Hensman, Cambridge and St. Bart.'s; H. P. Himsworth, Univ. Coll.; A. N. Hobbs, St. Bart.'s; S. D. Isaacs, Cambridge and Birmingham; Florence H. Johnson, Oxford and Univ. Coll.; Olive M. G. Jones and Emma J. King, Royal Free; L. H. Lerman, Middlesex; Marjorie H. Lester, Royal Free; G. W. T. McDonnell, London; G. D. Malhoutra, Punjab and St. Thomas's; Mary L. Marsh, Charing Cross; C. G. Millman, King's Coll.; N. S. Narasimhan, Guy's; C. W. Olsen, Michigan and St. Bart.'s; R. L. Peregrine, Oxford and Guy's; R. J. H. Raines, Leeds; Edith M. Redding, Charing Cross; A. Shedrow, Paris and St. Bart.'s; Thelma Shepherd, Royal Free; H. N. Skelton, Sheffield; Edith J. L. Smith, Royal Free; E. J. J. Smith, St. Bart.'s; M. Sternfeld, Freiburg; D. M. Sivasubrahmaniam, Madras and London; W. H. S. Wallace, St. Thomas's; D. B. J. Wijeyesekera, Ceylon; B. Williams, Edinburgh; J. C. F. L. Williamson, Cambridge and St. Bart.'s; J. M. Wrigley, London; and Janet D. E. Young, Lausanne and Royal Free.

Surgery.—B. A. J. Arthure, Charing Cross; Ellen M. Barnes, Univ. Coll.; N. R. Barrett, St. Thomas's; S. Behrman, St. Bart.'s; A. D. C. Bell, St. Thomas's; H. H. Boyden, St. Bart.'s; E. C. B. Butler and E. N. Callum, London; A. G. Carmichael, Middlesex; B. R. Caygill, Leeds; B. Cimbelmann, Basel and Middlesex; E. Corner, London; O. J. C. Cotton, St. Thomas's; A. Dala, Liverpool; W. J. G. Drake-Lee, St. Thomas's; G. H. Gange, Cambridge and Middlesex; G. H. Garfield, Cardiff; S. L. Gargye, Manchester; P. S. Gitlin, Guy's; F. N. Goggs, St. George's; S. Goldman, London; Helen M. Herbert, Royal Free; H. P. Himsworth, Univ. Coll.; R. Hodkinson, St. George's; P. E. G. Hopkins, Guy's; Kathleen Horne, Leeds; J. G. H. Ince, Univ. Coll.; A. W. Johns, London; G. R. Jones, Cambridge and King's Coll.; Margaret L. Jones, Univ. Coll.; G. H. Kennett, Sydney; L. B. Langmead, Guy's; E. G. Laurence, St. Bart.'s; L. H. Lerman, Middlesex; I. B. Limbery, St. Thomas's; F. W. Linton-Bogle and G. C. C. MacVicker, St. Bart.'s; F. B. Mallinson, St. George's; J. I. Mathias, Univ. Coll.; Oonnunniamma Matthai, Madras and Royal Free; I. Morris, Univ. Coll.; L. H. Morris, London; J. E. Morton, Guy's; L. J. O'Loughlin, Manchester; E. A. E. Palmer, St. Bart.'s; D. N. Parfitt, Cardiff; L. S. Penrose, Cambridge and St. Thomas's; F. Phillips, Adelaide; R. E. M. Pilcher, St. Thomas's; N. E. Pitt, Guy's; N. L. Probert and A. Rabinowitz, Middlesex; Elsie E. A. Ridley, Royal Free; R. E. Rix, Guy's; R. W. N. Robins, St. Thomas's; K. T. Samatapala, King's Coll.; H. R. D. Schofield, St. Mary's; F. G. V. Scovell, St. Bart.'s; E. H. Sears, Guy's; H. M. Sein, Calcutta and Guy's; R. Shelley and W. H. Simonds, St. Thomas's; Constance B. Smith, King's Coll.; T. R. Smith, J. E. Snow, and H. Stevens, St. Bart.'s; B. Stewart, Cambridge and Leeds; H. H. Stewart, St. Thomas's; R. Ström-Olsen, Cardiff; J. Vaughan-Bradley, Cambridge and St. Thomas's; F. H. Ward, St. Bart.'s; H. G. Wells, Westminster; Editha A. S. Wharton, Royal Free; Gladys E. Wilkinson, Manchester; F. Williams, Cambridge and London; T. P. Williams, St. Bart.'s; T. G. Willis, London; H. S. H. Wood, Middlesex; Evelyn C. Woodhead, Guy's; and R. G. Zaglama, Manchester.

Midwifery.—Constance E. Allen, Charing Cross; V. E. N. Allen, Bristol; I. T. Barling, N. R. Barrett, A. D. C. Bell, and S. P. Bhatia, St. Thomas's; K. C. Bhattacharyya, Durham; C. H. Birt, Birmingham; F. A. Blackwood, St. Thomas's; K. C. Blyth, London; V. G. Borgaonkar, Bombay; B. J. Bouché, Guy's; J. M. Buchanan, Melbourne and Middlesex; A. G. Carmichael, Middlesex; Nellie Clifton and Dorothy M. Conyers, Royal Free; T. M. Corcoran, Univ. Coll.; T. C. Dance, Birmingham; E. C. Dayus, St. Mary's; C. G. S. De Silva, Guy's; Marjorie M. Dobson, Royal Free; R. M. Dowdeswell, Cambridge and St. Thomas's; W. J. G. Drake-Lee, St. Thomas's; E. C. Duffett, Guy's; C. Emery, Univ. Coll.; E. V. Frederick, St. Bart.'s; M. A. Gaffar, Durham; G. H. Gange, Cambridge and Middlesex; I. K. Gayid, Cairo; W. N. O. George, Univ. Coll.; R. Gilmore, Manchester; P. S. Gitlin, Guy's; A. Hamid, Middlesex; H. S. Hamlin, St. Thomas's; A. El-S Handousa, G. A. S. Harris, and M. R. W. Hart, St. Bart.'s; H. P. Himsworth, Univ. Coll.; R. Hodkinson, St. George's; B. Hoffenberg, Liverpool; L. Hoffman, St. Bart.'s; C. E. Holden, Cambridge and St. Bart.'s; J. H. Hopper, St. Thomas's; E. J. Horn, London; M. C. Hounsfield, Cambridge and St. Bart.'s; I. M. Hughes, Manchester; Effie L. Hutton, Royal Free; C. F. Ind, Durham; R. A. Isenstein, Adelaide and London; L. A. Jacob, St. Thomas's; M. Jafar, Punjab; S. K. Jatar and E. J. Javeri, Bombay; L. A. Joelson and A. W. Johns, London; R. V. Kalyanpurker, Bombay; S. Paul and N. F. Kendall, St. Bart.'s; H. Y. Khwaja, Bombay; G. G. King, St. Mary's; T. C. Kohler, Adelaide and London; L. B. Langmead, Guy's; J. Lieberman, Leeds; K. Lindberg, Paris and London; F. W. Linton-Bogle, St. Bart.'s; O. T. Lloyd, Westminster; R. M. B. Lowis, St. Thomas's; M. Luckeenarain, Univ. Coll.; A. Maberly, St. Thomas's; G. C. C. MacVicker and M. J. Malley, St. Bart.'s; W. E. Mashiter, Cambridge and St. Thomas's; Olive S. May, King's Coll.; H. C. Mehta, Lahore; K. G. Milad, St. Mary's; G. Na Ranong, St. Thomas's; L. A. Newton, St. Bart.'s; D. A. Nicoll, King's Coll.; J. P. O'Donnell, Leeds; C. W. Olsen, Michigan and St. Bart.'s; M. K. Omar, Birmingham; D. N. Parfitt, Cardiff; L. S. Penrose, Cambridge and St. Thomas's; Alice D. K. Peters, Charing Cross; E. R. S. Phillips, London; F. Phillips, Adelaide; N. E. Pitt, Guy's; T. R. Plummer, St. George's; F. Pomarantz, St. Bart.'s; H. G. Pritchard, Charing Cross; S. M. Rahman, Middlesex; R. H. Raine, Durham; R. J. H. Raines, Leeds; M. H. Rashwan, Guy's; E. G. Recordon, St. Bart.'s; A. Reichlin, Leeds; J. B. A. Reynolds, St. Bart.'s; R. W. N. Robins, St. Thomas's; Eluned Saunders, Westminster; N. Schachnowitsch, Berlin and London; C. P. Scott, St. Thomas's; G. M. A. Shaikh, Bombay; D. M. Sivasubrahmaniam and D. R. E. Smith, London; E. J. J. Smith, St. Bart.'s; C. E. Soodeen, Middlesex; D. Stephens and H. Stevens, St. Bart.'s; H. H. Stewart, St. Thomas's; G. S. Storrs, Cambridge and St. Thomas's; R. Ström-Olsen, Cardiff; K. G. Sugden, St. Bart.'s; E. E. Swaby, Westminster; J. M. Taylor, St. Bart.'s; P. R. Thambugaga, Middlesex; A. R. Thomas, St. George's; Phyllis D. Towell, Royal Free; B. T. Utley, St. George's; Ercenwin A. Utting, St. Mary's; V. C. Verbi, King's Coll.; A. R. Waterhouse, Leeds; Grace E. Watson, Royal Free; T. G. Willis, London; A. Wilson, Leeds; and Janet D. E. Young, Lausanne and Royal Free.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.—The following is a supplementary list of 57 Licentiates issued recently by the College as the result of the Final Examination which terminated on Jan. 31st:—

G. J. Ahern, N.U.I. and London; A. F. Alsop, St. Bart.'s; Katherine Barnett, Charing Cross; A. L. Basham, St. Thomas's; H. L. W. Beach, St. Bart.'s; V. C. Benson, Cambridge and Guy's; Olwen R. Binyon, St. Mary's; L. Blackstone, London; E. W. Bowskill, Manchester and

Charing Cross; Joan C. Clatworthy, Univ. Coll.; E. C. Cosgrove, Cambridge and St. Bart.'s; C. F. J. Cropper, Oxford and King's Coll.; J. H. Cullinan, Cape, Edinburgh, and Guy's; J. L. H. Easton, Cambridge and King's Coll.; El S. El H. El Zawahry, Cairo and Middlesex; C. W. Evans, St. Mary's; G. H. Evans, Cambridge and London; M. J. Evans, St. Bart.'s; R. Evans, Univ. Coll.; J. C. Fast, Guy's; J. D. S. Flew, Univ. Coll.; H. W. Frickel, Cape and St. Mary's; Christina Gibson, King's Coll; J. C. Gregory, Univ. Coll.; M. M. Gyi, St. Thomas's; H. N. Hallam, Cambridge and London; D. G. Hamilton, St. Thomas's; E. R. Holiday, Oxford and London; Agnes H. Jackson, King's Coll.; Nigel M. Jerram, Cambridge and St. Thomas's; P. D. Johnson, St. Thomas's; R. A. Kennedy, Cambridge and St. Thomas's; M. Koettlitz, Cambridge and St. Thomas's; A. H. Lafone, St. Mary's; L. P. E. Laurent, Univ. Coll.; Margaret Leathes, Cambridge and Royal Free; K. Lindenbaum, St. Mary's; R. F. Lister, Cambridge and London; Janet Lochore, Royal Free and Edinburgh: J. V. Macgregor, Univ. Coll.; W. A. N. Marrow, Middlesex; D. B. Mumby, St. Thomas's; M. T. O'Sullivan, Cork and Guy's; Gwynedd M. Phillips, King's Coll.; R. W. Raven, St. Bart.'s; R. W. Reid, St. Thomas's; I. Schoub, Petrograd and London; Margaret P. Shackle, Cambridge and King's Coll.; C. G. Sinclair, St. Bart.'s; . AB. Swarbreck, South Africa and Univ. Coll.; H. M. Turnbull, Durham and Charing Cross; K. R. Unger, Middlesex; R. N. Wilcox, St. Thomas's; C. E. Willing, Adelaide; G. N. Wood, Cambridge and Guy's; C. Wroth, St. Bart.'s; and B. A. Young, Univ. Coll.

UNIVERSITY OF LONDON.—The degree of D.Sc. in biochemistry has been conferred on Mr. H. G. Reeves, of King's College. The degree of Ph.D. in bacteriology has been conferred on Mr. F. M. Burnet, of the Lister Institute, and the same degree in the principles, history, and method of science on Miss D. M. Turner, of University College. At the same examination Mr. G. D. Morison, of the North of Scotland College of Agriculture, obtained the degree of Ph.D. in entomology.

MEDICAL SOCIETY OF LONDON.—The 155th anniversary dinner will be held at the Trocadero Restaurant, Shaftesbury-avenue, W.C., on Thursday, March 8th, at 7.45 P.M. Mr. H. W. Carson, the President, will be in the chair.

ROYAL MICROSCOPICAL SOCIETY.—A meeting will be held at 20, Hanover-square, W. 1, on Feb. 15th, at 7.30 P.M., when Mr. D. J. Scurfield will read a paper on A New Type of Aquarium Microscope, and Prof. J. T. Wilson will describe a convenient table for microscopy.

INDUSTRIAL MEDICINE.—As already announced, the fifth International Medical Congress for Industrial Accidents and Diseases will be held in Budapest from Sept. 2nd–8th, and the Council of Industrial Medicine has been nominated to act as the British National Committee. Dr. D. A. Coles, chairman of the Council, and Prof. Edgar L. Collis, vice-chairman, along with Sir Thomas Oliver and Dr. Theodore Thompson, are the members of the Permanent Committee of the Congress. It is hoped that a large number of medical men and women in this country who are interested in the problems of industrial disease will attend a congress which promises to be a great scientific and social event. Further information can be had from the Secretary of the Council or from the hon. foreign secretary, Dr. H. S. N. Menko, 12, Stratford-place, London, W. 1.

TAVISTOCK CLINIC FESTIVAL DINNER.—A dinner to commemorate the clinic's seventh "birthday," was held on Feb. 6th at the Mayfair Hotel, under the chairmanship of Mr. Dougal O. Malcolm, the treasurer, who proposed the health of the visitors. He explained the work and financial difficulties of the clinic, and appealed for a substantial birthday gift from the "grown-ups" present. Viscount Lascelles, responding, wittily described the plight of the mill-owners of the West Riding since skirts became short, and urged that every penny saved on dress materials should be given to the clinic, which was doing a work of great importance to the nation's mental health. Manifestations of nervous disorder ranged, he had been told, from insanity to asthma and from paralysis to eczema, and the country looked to such institutions as the Tavistock Clinic to repair the nervous system of the parents of the next generation. Sir Farquhar Buzzard, proposing "The Clinic," said that the education of the "normal" population was one of the great problems of the future. Reform in education could only come about, as in medicine, through a study of the symptoms and ætiology of bad results. Psychotherapy revealed the difficulties of the child and youth in process of education. The company had heard enough of the work of the Tavistock Clinic to arouse a strong desire to give to it. He himself would give a piece of gratuitous advice of a professional character; they must not suppress their desire. Dr. H. Crichton Miller, replying, paid a tribute to the work of the staff and claimed personal credit only for introducing the psycho-analytical farce "Suppressed Desires," which was then played. Lord Lascelles announced that annual subscriptions to the amount of £162 11*s.* and gifts to the amount of £375 8*s.* 6*d.* had been promised that evening.

UNIVERSITY OF MANCHESTER.—Sir Arthur Keith will deliver a Ludwig Mond lecture on May 8th at the University on Implications of Darwinism.

LISTERIAN SOCIETY.—Mr. N. D. Buxton will give the presidential address at King's College Hospital on Feb. 15th at 8 P.M. As this is the bicentenary year of the birth of John Hunter the subject of the address will be Hunter's Life and Work.

RESEARCH IN SANITARY SCIENCE.—The next election to the Grocers' Company Research Scholarships in sanitary science will take place in May. Each scholarship is of the value of £300 a year with an allowance for cost of apparatus and other working expenses. The scholarships are renewable for a second or third year.

A MOTOR CLUB'S INSURANCE SCHEME.—An insurance scheme has been established by the Middlesbrough Motor Club to enable hospitals, in any part of the country, to receive payment for treating members injured in road accidents. Members will pay a premium of 2*s.* 6*d.*, and the following scale of payments to hospitals has been fixed: single dressing, 10*s.* 6*d.*; one day's detention, £1 1*s.*; one week, £3; and at the same rate up to five or six weeks.

LONDON HOSPITAL SUNDAY FUND.—Mr. R. Holland Martin, C.B., has been re-elected Vice-President, Sir Charles Wakefield and Mr. John Henry Buxton hon. secretaries, and Mr. J. Arnold James secretary. Mr. A. L. Sturge, formerly chairman of Lloyd's, and the Rev. A. A. Green, of the Hampstead Synagogue, have been added to the General Purposes Committee.

ROYAL MEDICO-PSYCHOLOGICAL ASSOCIATION.—The next quarterly meeting of this association will take place on Thursday, Feb. 16th, at City Mental Hospital, Fishponds, Bristol. On Wednesday, Feb. 15th, at 7.30, P.M. there will be a dinner at the Royal Hotel, College Green. A paper entitled Some Points in the Histology of the Globus Pallidus will be read by Dr. E. Barton White and Dr. Geoffrey Hadfield, and will be followed by a paper entitled Some Notes on the Mental State in Cardiac Disease, by Dr. Carey Coombs.

ROYAL FREE HOSPITAL.—A Centenary service of thanksgiving will be held at St. Andrew's, Holborn, on Sunday, Feb. 19th, at 11 A.M., when the preacher will be the Bishop of Willesden, and the Lord Mayor and the Mayor of Holborn, Finsbury, and Islington will be present in state. Places will be reserved for those who notify the secretary of their intention to attend. St. Andrew's has been chosen for the reason that the foundation of the hospital came about through an incident which happened in the precincts of the church and is commemorated by a memorial tablet in the nave.

THE Ella Sachs Plotz Foundation has now made 55 grants for the advancement of scientific investigation and has aided workers in the United States, Great Britain, France, Germany, Austria, Hungary, Switzerland, Italy, Sweden, Esthonia, and Czecho-Slovakia. During 1927 17 new grants were made to scientists outside the United States. The only British recipient last year was Dr. J. Dawson, of Edinburgh, who is investigating the pathology of the breast. Applications for 1928–29 should be in the hands of Dr. Joseph C. Aub, Massachusetts General Hospital, Boston, before May 15th.

Messrs. J. and A. Churchill announce the early publication of the following books: A ninth edition of Lee's "Microtomist's Vade Mecum," edited by Dr. J. Brontë Gatenby and Dr. E. V. Cowdry, with collaborators; "Oils, Fats, and Fatty Foods," by E. Richards Bolton; second and enlarged edition of the work originally called "Fatty Foods," by Bolton and Revis. "Laboratory Manual for the Detection of Poisons and Powerful Drugs," by Dr. W. Autenrieth, translated from the fifth German edition. A new volume entitled "An Elementary Text-Book of General Microbiology," by W. Giltner.

ROYAL SANITARY INSTITUTE.—The annual congress is being arranged at Plymouth from July 16th–21st under the presidency of Lord Astor, at which the usual sectional meetings will be held for the reading and discussion of papers relating to Sanitary Science and Preventive Medicine, Maternity and Child Welfare including School Hygiene, Personal and Domestic Hygiene, Hygiene of Food, Hygiene in Industry, and Veterinary Hygiene. Conferences of various groups of public health officers are planned and a popular lecture will be given by Prof. W. E. Dixon. During the congress an exhibition of municipal sanitation and appliances relating to domestic health and comfort will be opened. Anyone wishing to take part should address the Secretary of the Institute at 90, Buckingham Palace-road, London, S.W. 1.

DONATIONS AND BEQUESTS.—Mr. Joseph Hall, of rton Lees, Sheffield, left £50,000 for charity, including 5,000 to his sister-in-law, Clara Ann Hall, at her absolute posal to apply all or part thereof for such charitable rposes as are known to have been the intention of his late ther, and £500 each to the Sheffield Institution for the nd, Sheffield Royal Infirmary, Sheffield Royal Hospital, e Jessop Hospital for Women, the Free Hospital for Sick ildren, Sheffield, and the Rotherham Hospital and spensary.—Mrs. Maria Draycott-Smith, Nottingham, left 0 to the Nottingham Cripples Guild Fund, £200 each the Royal Midland Institute for the Blind and the ttingham Midland Eye Infirmary, and after a few other acies, the residue of her property to Nottingham General spital and the Castle Gate Samaritan Hospital for Women, ttingham, in equal shares.—Apart from the payment of ne private bequests the whole fortune amounting to 0,000 of Mr. James Sanderson, of The Hawthorns, lashiels, Selkirkshire, woollen manufacturer, has been left charity. He left besides other bequests £1000 each to the ttage Hospital, Galashiels, and the Queen Victoria bilee Nurses Fund. The residue of the property is to be ided into 22 parts and as to 18 for, amongst others, for erection and endowment of cottage homes for the erving poor of Galashiels, five to the University of inburgh for certain specified purposes, one part each to inburgh Infirmary and the Royal Edinburgh spital for Incurables, one-half part to the Royal inburgh Hospital for Sick Children, and one-quarter part h to the Royal Blind Asylum and School Edinburgh and Royal Society for Home Relief for Incurables, Edinburgh.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS

OPENING OF PARLIAMENT: THE KING'S SPEECH.

THE new session of Parliament was opened by the King State on Tuesday, Feb. 7th. In the course of the Speech m the Throne His Majesty said that measures would be sented during the coming session for giving effect to tain recommendations of the Royal Commission on tional Health Insurance. The burdens imposed upon ustry and agriculture by the present incidence of local es had attracted the anxious attention of the Government, o were now engaged upon inquiries into the possibility affording some relief from these burdens to the producing mmunity and into the changes in local government which uld thereby be involved.

FRANCHISE BILL.

On Tuesday, Feb. 7th, Sir W. JOYNSON-HICKS (Home retary) gave notice of his intention to bring in a Bill amend the law relating to the Parliamentary and local vernment franchise.

HOUSE OF LORDS.

TUESDAY, FEB. 7TH.

DEBATE ON THE ADDRESS.

The motion for a humble address of thanks to His jesty for his gracious Speech was moved by the DUKE OF NTROSE and seconded by Lord CRANWORTH.

The MARQUESS OF SALISBURY (Lord Privy Seal), speaking behalf of the Government, and replying to certain icisms made by Viscount HALDANE (Leader of the position peers), Earl BEAUCHAMP (Leader of the Liberal ers), and others, said that owing to the shortness of the sent session, due to the fact that the Government hoped prorogue Parliament at the end of the summer and begin new session in November, the Government would not ceed with the Factories Bill at present. Their lordships st not think, however, that the Government had andoned that Bill. They hoped that it would be one of measures—perhaps the principal one—which would eive a second reading before next Christmas in the next sion.

The Address was agreed to.

HOUSE OF COMMONS.

TUESDAY, FEB. 7TH.

The SPEAKER, having read the King's Speech,

Colonel LAMBERT WARD moved a humble address of nks to His Majesty for his gracious Speech.

Mr. TEMPLETON seconded.

Mr. RAMSAY MACDONALD (Leader of the Opposition) said that this was the most meagre King's Speech he had ever heard read during his time in the House. The Government's idea of this session apparently was that it was going to be pretty much of a prolonged holiday so far as they were concerned. Well, they would have to see about that, because the Opposition did not take the same complacent view of social conditions as was taken by those who had drafted this speech for His Majesty. With regard to the domestic programme outlined by the Government in the King's Speech the most prominent feature was it omissions. There was, for instance, the Factory Bill which had been promised over and over again. There was also the Washington Convention. The Government's economic policy from beginning to end had been that the nation's trade was to be built up on low wages, sweated conditions, and long hours.

Mr. LLOYD GEORGE, referring to the promised National Health Insurance Bill, said he assumed that it would deal with the recommendations of the Royal Commission which reported about a couple of years ago, and which was appointed by the late Minister of Health.

Mr. CHAMBERLAIN (Minister of Health) indicated assent.

Mr. LLOYD GEORGE: I should like to know whether there is any cash in that. Is the Chancellor of the Exchequer going to pay back the money which he extracted?

Mr. CHURCHILL shook his head.

Mr. LLOYD GEORGE: Then I can tell him that unless he does so those recommendations will be of no use at all. They will be like an engine without petrol; they will not march, they will stick. The only recommendations of the slightest value in that Commission's report are in regard to additional benefits. Some of those recommendations are invaluable, but they all mean more cash, and I do not believe that that cash is available now. Can the Minister of Health get the money back which the Chancellor of the Exchequer has taken away? The Chancellor of the Exchequer has shaken his head very emphatically. I am afraid that he is going to win on this occasion, and I do not look forward to this Bill with any sort of satisfaction; nor will anybody else.

Mr. BALDWIN (Prime Minister), who spoke immediately after Mr. Lloyd George, said that he was not sure if the right hon. gentlemen asked if there was any "catch" or any "cash" in the proposed Health Insurance Bill.

Mr. LLOYD GEORGE said that he used the word "cash."

Mr. BALDWIN: There is neither "cash" nor a "catch" in the Bill. I am told that it deals purely with machinery, which will facilitate very much the working of the Act, and it will neither cost the Exchequer anything nor bring anything into their funds. Continuing, Mr. Baldwin said that the Government hoped to have an autumn session. The Government regretted very much that in the circumstances there was no possibility of getting through any Bill which might be regarded as controversial between now and the end of July. He hoped, if they were able to begin a new session as they intended in November, that the Factories Bill might be dealt with before the end of the next session.

The debate on the Address was adjourned.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MONDAY, Feb. 13th.—5 P.M., WAR. Paper: Surgeon-Commander S. F. Dudley, R.N.: Some Aspects of the Epidemiology of Typhoid Fever in the Royal Navy.

TUESDAY.—4.30 P.M., PSYCHIATRY. Clinical Meeting at the Maudsley Hospital, Denmark Hill, S.E. Tea will be provided at 4 P.M. A series of cases of acute schizophrenia will be shown. A discussion on prognosis in acute schizophrenia will follow. Visitors will have an opportunity of inspecting various pathological specimens.

WEDNESDAY.—LIBRARY. The main Library will close at 5 P.M., but readers will be accommodated in other rooms until 6.30 P.M. 8.30 P.M., SOCIAL EVENING. From 8.30 to 9 P.M. Fellows and guests will be received in the Library by the President and Lady Berry. At 9.15 P.M. Lieut.-Colonel W. P. MacArthur, R.A.M.C., will give an Address entitled Some Medical References in Pepys (with illustrations). The Library will be open, and a number of exhibits, kindly lent by the Wellcome Historical Medical Museum, and others will be on view. Music and light refreshments.

THURSDAY.—5 P.M., DERMATOLOGY. (Cases at 4 P.M.). Cases: Dr. H. MacCormac: (1) Leukæmic Erythro-

dermia. Dr. M. Sydney Thomson: (2) Acanthosis Nigricans. Other cases will be shown.

FRIDAY.—8 P.M., OBSTETRICS. Specimen: Dr. Bethel Solomons: Two Uteri removed for Puerperal Sepsis. Short Communication: Mr. J. Ellison: Two Extreme Cases of Multiple Myomata in Sisters of under 25 Years. Paper: Mr. Frederick Roques: Encephalitis Lethargica and Pregnancy. 8.30 P.M., ELECTRO-THERAPEUTICS. Cinematograph Demonstration: Dr. R. G. Canti: Tissue Cultures, including the Action of Irradiation on Living Cells Grown in vitro.

MEDICAL SOCIETY OF LONDON, 11, Cavendish-street, W.

MONDAY, Feb. 13th.—8.30 P.M., Discussion on the Use and Abuse of Ultra-violet Light Therapy, to be introduced by Dr. Leonard Hill, Dr. O'Donovan, and Dr. C. B. Heald.

SOCIETY OF SUPERINTENDENTS OF TUBERCULOSIS INSTITUTIONS.

SATURDAY, Feb. 18th.—3 P.M. (at 122, Harley-street, W.), adjourned meeting, Dr. A. Niven: Open-air Treatment and Meteorological Conditions

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE, 11, Chandos-street, Cavendish-square, London, W.

THURSDAY, Feb. 16th.—8.15 P.M., preceded by a demonstration at 7.45 P.M., Dr. A. R. Paterson: The Provision of Medical and Sanitary Services Among Rural Populations in Tropical Africa.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.

MONDAY, Feb. 13th.—Demonstrations in the morning and afternoon by the Conservator and the Librarian.

TUESDAY.—4 P.M., Sir Holburt Waring: Hunterian Oration on the Progress of Surgery from Hunter's Day to Ours. Demonstrations morning and afternoon by the Conservator and Librarian. Festival Dinner, 8 P.M.

WEDNESDAY.—Demonstrations morning and afternoon.

THURSDAY.—Demonstrations in morning only. 3 P.M., Reception at the College. 5 P.M., Dr. G. C. Peachey: Thomas Vicary Lecture on the Homes of the Hunters.

FRIDAY.—Demonstrations.

SATURDAY.—Demonstrations.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, Feb. 13th, to SATURDAY, Feb. 18th.—FELLOWSHIP OF MEDICINE LECTURE at the Medical Society of London, 11, Chandos-street, Cavendish-square, W. Mon., at 5 P.M., Mr. Duncan Fitzwilliams: Hysterical Breasts.—WEST END HOSPITAL FOR NERVOUS DISEASES, Welbeck-street, W. Mon., clinical demonstrations by Dr. C. Worster-Drought, at 5 P.M.—ST. PETER'S HOSPITAL, Henrietta-street, Covent Garden, W.C. Fri., clinical demonstrations by Mr. Alban Andrews, at 5 P.M.—ROYAL WESTMINSTER OPHTHALMIC HOSPITAL, Charing Cross, W.C. Fri., lecture-demonstration by Mr. M. L. Hine on the Clinical Application of Perimetry, at 5 P.M. The above are open to members of the medical profession, without fee.—ST. JOHN'S HOSPITAL, Leicester-square, W.C. Course in Dermatology. Every afternoon. Pathology course arranged.—THE NATIONAL HOSPITAL, Queen-square, W.C. Course in Neurology. Every afternoon. Demonstrations. Lectures at certain times.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham.

MONDAY, Feb. 13th.—2.30 to 5 P.M., Medical, Surgical, and Gynæcological Clinics. Operations.

TUESDAY.—2.30 to 5 P.M., Medical, Surgical, Throat, Nose and Ear Clinics. Operations.

WEDNESDAY.—2.30 to 5 P.M., Medical, Skin, and Eye Clinics. Operations.

THURSDAY.—11.30 A.M., Dental Clinics. 2.30 to 5 P.M., Medical, Surgical, and Ear, Nose and Throat Clinics. Operations.

FRIDAY.—10.30 A.M., Throat, Nose and Ear Clinics. 2.30 to 5 P.M., Surgical, Medical, and Children's Diseases Clinics. Operations.

On MONDAY, Feb. 13th, and WEDNESDAY, Feb. 15th, at 2 P.M., there will also be demonstrations of gynæcological cases and eye cases by Mr. Aubrey Goodwin and Mr. N. B. B. Fleming respectively.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, W.

MONDAY, Feb. 13th.—10 A.M., Dr. Dowling: Skin Department. 11 A.M., Mr. Tyrrell Gray: Surgical Wards. 2 P.M., Dr. Trevor Davies: Gynæcological Department. 4.30 P.M., Dr. Snowden: The Anxiety Neurosis (lecture).

TUESDAY.—2 P.M., Dr. Shaw: Medical Out-patients. 2 P.M., Mr. Sinclair: Surgical Out-patients. 2 P.M., Mr. Hamblen Thomas: Throat, Nose and Ear Department.

WEDNESDAY.—10 A.M., Dr. Burnford: Medical Wards. 2 P.M., Mr. Tyrrell Gray: Operations. 2.30 P.M., Mr. Donald Armour: Surgical Wards.

THURSDAY.—10 A.M., Dr. Grainger Stewart: Neurological Department. 2 P.M., Mr. MacDonald: Genito-urinary Department. 2 P.M., Mr. Bishop Harman: Eye Department.

FRIDAY.—10 A.M., Dr. Pritchard: Special Medical Treatment Clinic. 2 P.M., Mr. Vlasto: Throat, Nose and Ear Department. 2 P.M., Dr. Shaw: Medical Out-patients. 4.30 P.M., Mr. Simmonds: Surgical Emergencies (lecture).

SATURDAY.—10 A.M., Dr. Burnford: Bacterial Therap
10 A.M., Dr. Owen: Medical Diseases of Children.
Medical and Surgical Out-patients, Operations, Speci
Departments, daily, 10 A.M. to 5 P.M., Saturday
10 A.M. to 1 P.M.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATIO
St. James's Hospital, Ouseley-road, Balham, S.W.

WEDNESDAY, Feb. 15th.—4 P.M., Dr. Stanley Wyar
Blood Transfusion.

NATIONAL HOSPITAL, Queen-square, Bloomsbury.

MONDAY, Feb. 13th.—2 P.M., Dr. Hinds Howell: Ou
patient Clinic. 3.30 P.M., Dr. Risien Russell: Crani
Nerve Palsies (1).

TUESDAY.—2 P.M., Dr. Walshe: Out-patient Clini
3.30 P.M., Mr. Armour: Cranio-cerebral Topography.

THURSDAY.—2 P.M., Dr. Kinnier Wilson: Out-patie
Clinic. 3.30 P.M., Dr. Risien Russell: Cranial Ner
Palsies (2).

FRIDAY.—2 P.M., Dr. Adie: Out-patient Clinic. 3.30 P.M
Dr. Martin: Muscular Atrophies.

HOSPITAL FOR SICK CHILDREN, Great Ormond-stree
W.C.

THURSDAY, Feb. 16th.—4 P.M., Dr. Nabarro: Mode
Methods of Controlling Certain Infectious Diseases.

ROYAL NORTHERN HOSPITAL, Holloway-road, N.

TUESDAY, Feb. 14th.—3.15 P.M. (at the Royal Che
Hospital), Dr. F. E. S. Willis: Early Diagnosis
Pulmonary Tuberculosis.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospit
49, Leicester-square, W.C.

TUESDAY, Feb. 14th.—5 P.M., Dr. G. B. Dowling: Staphy
coccal Infections.

THURSDAY.—5 P.M., Pathology Demonstration.

CENTRAL LONDON THROAT, NOSE AND EAR HOSPITA
Gray's Inn-road, W.C.

FRIDAY, Feb. 17th.—4 P.M., Dr. A. Wylie: Dysphagia
Pain in Swallowing.

ST. PAUL'S HOSPITAL, Endell-street, W.C.

WEDNESDAY, Feb. 15th.—4.30 P.M., Mr. Claude Mil
Retention of Urine.

ROYAL INSTITUTE OF PUBLIC HEALTH, 37, Russe
square, W.C.

WEDNESDAY, Feb. 15th.—4.30 P.M., Dr. W. M. Feldma
Medico-Legal Aspects of Jewish Life.

CHADWICK PUBLIC LECTURES.

THURSDAY, Feb. 16th.—5.15 P.M. (in the Hastings H
British Medical Association, Tavistock-square, W.C
Sir W. Heaton Hamer: The Germ Theory and t
Old Epidemiology (1).

PEOPLE'S LEAGUE OF HEALTH.

WEDNESDAY, Feb. 15th.—6 P.M. (at the Medical Societ
Rooms, 11, Chandos-street, Cavendish-square, W
Dr. T. Beaton: Thought and Memory.

FRIDAY.—6 P.M., Dr. Leonard Hill: Nature and Purp
of Food.

ST. MARY'S HOSPITALS, MANCHESTER (at the Whitwor
street West Branch).

FRIDAY, Feb. 17th.—4.30 P.M. (Post-Graduate Lectu
Mr. Morley: Congenital Pyloric Stenosis.

UNIVERSITY OF SHEFFIELD POST-GRADUATE CLINI
FRIDAY, Feb. 17th.—3.30 P.M., Mr. Cuff: Surgical Cas

Appointments.

BUCHANAN, R. W., M.B., Ch.B. Edin., has been appoin
Medical Officer of Health, Inveraray.

COOPE, ROBERT, M.D., Ch.B. Liverp., M.R.C.P. Lond., H
Physician to the Hospital for Consumption and Disea
of the Chest, Liverpool.

DATE, W. ADLINGTON, M.B., B.S. Lond., L.R.C.P. Lon
M.R.C.S., Honorary Assistant Anæsthetist to the Princ
Elizabeth Orthopædic Hospital, Exeter.

GLEGG, R. A., M.D., D.P.H. Edin., County Medical Officer
Health for East Sussex.

MARLEY, J., L.R.C.P. Lond., M.R.C.S., Certifying Surg
under the Factory and Workshop Acts, Hoylake Dist
of the County of Chester.

ROXBURGH, A. C., M.D. Camb., M.R.C.P. Lond., Physician
Charge of the Skin Department, St. Bartholomew's Hospi

SIMPSON, G. W., M.D., B.Ch. Edin., D.P.H., Medical Offi
under the Scottish Board of Health.

WATKINS, K. H., M.B., Ch.B. Manch., House Surgeon, M
chester Royal Infirmary.

Vacancies.

For further information refer to the advertisement columns.

Ayr, Glengall Hospital.—Asst. Phys. £300.
Birmingham, Queen's Hospital.—Med. Registrar. £100.
Blackburn County Borough.—M.O.H., &c. £1000.

otle Borough Hospital.—Sen. M.O. Also two Jun. M.O.'s. At rate of £150 and £125 respectively.
istol General Hospital.—H.P., H.S., and Res. Obstet. O., &c. Each at rate of £80.
istol Royal Infirmary.—H.P.'s, H.S.'s, Dental H.S., &c. Each at rate of £80.
xton, Devonshire Hospital.—Asst. H.P. At rate of £150.
nterbury, Kent and Canterbury Hospital.—Hon. Asst. Phys. and two Hon. Asst. Surgs.
ventry and Warwickshire Hospital.—Res. H.S. £125.
oydon, Children's Medical Home, Waddon.—Visiting M.O. (V.D.). £150.
oydon County Borough.—Deputy M.O.H., &c. £780.
prus.—District M.O. £600.
rbyshire County Council.—M.O. £600.
wsbury and District General Infirmary.—H.S. £200.
st African Medical Service.—Sanitation Officer. £600.
inburgh Royal Infirmary, Ophth. Dept.—Sen. Clin. Asst. £145.
eter, Royal Devon and Exeter Hospital.—Res. Cas. O. At rate of £100.
ocers' Company.—Research Scholarships. £300.
ildford Union Institution, Warren-road.—Res. Asst. M.O.
ng-Kong Government.—Radiologist Electrologist. £740.
spital for Sick Children, Great Ormond-street, W.C.—Asst. Pathologist and Research Fellow. £450.
rd Emergency Hospital.—Sen. and Jun. H.S.'s. £110 and £90 respectively.
swich, Heathfield Infirmary, &c.—Asst. Res. M.O. £250.
icester Royal Infirmary.—Two H.P.'s. At rate of £125.
ncoln County Hospital.—Jun. H.S. At rate of £150.
erpool and District Hospital for Diseases of Heart.—H.P.
ndon School of Hygiene and Tropical Medicine, 23, Endsleigh-gardens, W.C.—University Chair of Biochemistry. £1300.
ndon Temperance Hospital, Hampstead-road, N.W.—Res. M.O. At rate of £175.
nchester and Salford Hospital for Skin Diseases.—H.S. £100.
ldmay Mission Hospital, Austin-street, Bethnal Green, E.—Jun. Res. M.O. £100.
nistry of Health, Whitehall, S.W.—M.O. £600.
ttingham and Midland Eye Infirmary.—H.S. £200.
durman, C.M.S. Hospital.—Doctor required.
een's Hospital for Children, Hackney-road, E.—Res. M.O. £200. Cas. O. At rate of £100. Also Two H.P.'s. Each at rate of £100.
hmond, Surrey, Royal Hospital.—Jun. H.S. At rate of £100.
shford Union.—Dist. M.O. and Public Vaccinator. £120.
yal Chest Hospital, City-road, E.C.—Asst. Tub. O. £600.
yal College of Surgeons of England.—Examiners.
yal Free Hospital School of Medicine for Women.—University Chair of Pathology. £1000.
yal National Orthopædic Hospital, 234, Great Portland-street, W.—H.S. At rate of £150.
yal National Orthopædic Hospital (Country Branch), Stanmore, Middlesex.—H.S. At rate of £150.
yal Northern Hospital, Holloway, N.—Ophth. Surg. Also H.S. At rate of £70.
Albans and Mid Herts Hospital and Dispensary.—Hon. Surg.
George's Hospital, S.W.—Asst. Radiologist. £100.
John's Hospital for Diseases of Skin, Leicester-square, W.C.—Hon. Med. Reg.
Marylebone General Dispensary, 30, Marylebone-lane, W.—Actinotherapist.
Thomas's Hospital.—Phys. in charge of Out-patients. Also Res. Asst. Phys.
naritan Free Hospital for Women, Marylebone-road, N.W.—H.S. At rate of £100.
ckport Infirmary.—Res. Surg. O. £250.
ke-on-Trent, City of.—M.O. of Venereal Diseases Centre. £850.
rwick County Mental Hospital, Hatton.—Asst. M.O. £300.
st London Hospital, Hammersmith-road, W.—Hon. Obstet. Reg.
stern Ophthalmic Hospital, 155, Marylebone-road, N.W.—Sen. and Jun. Hon. Anæsthetist. £1 1s. per visit.
ndsor, King Edward VII. Hospital.—Hon. Asst. Anæsthetist.
rk Maternity Hospital.—H.S. £350.

The Chief Inspector of Factories announces vacant appointments for Certifying Factory Surgeons at Middleton-in-Teesdale (County of Durham), Aberayron (Cardiganshire), and at Rothesay (Buteshire).

Births, Marriages, and Deaths.

BIRTHS.

BANNERMAN.—On Feb. 2nd, at Highclere, Alton, Hants, the wife of R. G. Bannerman, M.D., of a son.

BRADSHAW.—On Feb. 3rd, at Crouched Friars, Colchester, the wife of Dr. R. D. Bradshaw, of a daughter.

THOMAS.—On Jan. 31st, at Harley-street, the wife of C. Hamblen Thomas, F.R.C.S., of a son.

WIRGMAN.—On Jan. 30th, at Victoria-grove, W., the wife of C. Wynn Wirgman, M.D., F.R.C.S., of a son.

DEATHS.

MARSHALL.—On Jan. 31st, at a nursing home, Glasgow, George Balfour Marshall, M.D., F.R.F.P.S.G., Sandyford-place, Glasgow.

N.B.—*A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.*

Notes, Comments, and Abstracts.

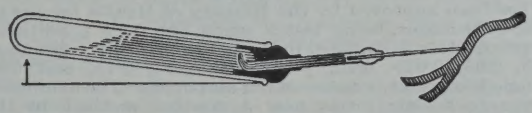
BLOOD CULTURE MADE EASY.

SINCE the days when the laboratory examination of blood first became of importance in clinical medicine pathologists have felt the need of some simple and safe method for the transmission of bacteriologically clean specimens of blood from the patient to the laboratory. Divers expedients varying according to the practice of individual laboratories have been evolved from time to time, but none has gained universal acceptance for the reason that none has been really satisfactory. The Behring Institute, of Marburg, Germany, have lately placed upon the market a device which would appear to offer the solution of the problem and which is as nearly foolproof as possible. The device consists of an evacuated glass test-tube, closed by means of

FIG. 1.

a stout hollow rubber cork with a short stiff nozzle; into the nozzle is let a glass tube, the end of which inside the hollow of the rubber stopper is bent at right angles in such a way that in the position of rest the outlet presses against the rubber and is thereby sealed; to the end of the tube outside the cork is sealed a stout hollow venipuncture needle, this in its turn being contained in a sealed glass tube. The whole apparatus (Fig. 1) is sterile when sent out. For use the sealed tube containing the needle is scratched with

FIG. 2.



a file and broken off, the needle thus being exposed; this is plunged into a vein in the usual way; as soon as blood enters the connecting glass tube the nozzle of the rubber cork is bent in such a way as to break the contact between the end of the tubing inside the test-tube and the rubber wall of the hollow stopper. Immediately this is done the negative pressure existing within the test-tube comes into play and sucks blood from the vein into the tube (Fig. 2); the rate of flow can be varied as desired by manipulation of the rubber nozzle. Though difficult to explain, the mechanism is simplicity itself and except in the most inexpert hands cannot fail but work. The whole apparatus is sold under the name of a "Venule," and these venules can be obtained either empty or filled with various solutions for the dilution of blood. Of particular interest to pathologists will be the venules containing nutrient media for the examination of blood by culture. Up to the present the impossibility of obtaining satisfactory samples of blood for this purpose has been one of the outstanding difficulties of clinical bacteriology. This difficulty would now appear to have been satisfactorily solved. The English agent for the "Venule" is Mr. W. Bredt, 41, Great Tower-street, London, E.C. 3.

A USEFUL PHOTOGRAPHIC COMPANION.

WE have received the "British Journal Photographic Almanac" for 1928. The annual is now in its sixty-third year and is a very helpful handbook for photographers, its 788 pages of letterpress and advertisements containing information of practical value. This includes illustrated articles on the service of photography in commerce, manufactures and in scientific investigation, from the aeroplane, and in big-game hunting; the use of the hand camera in recording objects of interest, especially during holiday periods, and amateur cinematography. In the Epitome of Progress practical hints are given and new methods of procedure described, while space is devoted to new cameras, lenses, and apparatus, and there is a full list of photographic societies and allied bodies in the British Isles. There are also useful formulæ and tables of exposure. The book is embellished with 64 gravure reproductions of camera pictures by noted exhibitors, and a full index makes reference easy. The annual is published by Messrs. Henry Greenwood and Co., Ltd., 24, Wellington-street, Strand, London, W.C., at 2s.

THE CHILD GUIDANCE COUNCIL.

A LECTURE will be delivered under the auspices of the Child Study Society by Sir Humphry Rolleston, President of the Child Guidance Council, on Feb. 16th, at 6 P.M. The subject will be Child Guidance and the lecture will take place at the Royal Sanitary Institute, 90, Buckingham Palace-road, London, S.W. 1.

The establishment of child guidance clinics in America was one of the activities of the Commonwealth Fund.[1] That fund is now financing a "Child Guidance Council" in England and is considering the creation of a clinic where social workers could be trained and maladjusted children treated before they become neurotics or delinquents. This clinic is to be attached to a university and will, it is hoped, demonstrate to the public the need, value, and practicability of work on these lines. The Council, which consists of medical men, magistrates, educationists, social workers, and members of various associations and authorities, believes that clinics of this sort are essential if children are to be saved from lives of unhappiness and crime. It is hoped that the clinics, once started, will be carried on by local effort. The Commonwealth Fund has generously undertaken to train five social workers for one year in America, to meet the expenses of well-known persons, including the psychiatrist and psychologist appointed to the clinic sent to investigate American work, and to support two social workers in the British clinic for one year. No one who is acquainted with the problems of child life can question the need for an intelligent and wise handling of the situation, and if the Child Guidance Council can avoid the pitfalls of institutionalism it will do a work of immense national importance. The Secretary is Mrs. Beach, 24, Buckingham Palace-road.

NEW PREPARATIONS.

Sulphostab.—The word is a trade mark for dioxydiamino-arsenobenzol-sodium formaldehyde-bisulphite, and is manufactured by Boots Pure Drug Company, Nottingham. It is manufactured under the Therapeutic Substances Act, 1925, and has been approved by the Ministry of Health for use in public institutions, being tested under approved conditions. The preparation is supplied in the following doses: grammes 0·025, 0·05, 0·075, 0·10, 0·15, 0·20, 0·30, 0·45, and 0·60 in single boxes and in boxes of ten ampoules. The exhibition of organic arsenic forms now a routine method in the treatment of syphilis, and this preparation has been designed for hypodermic use in view of the known drawbacks that may be present either in the intravenous or the intramuscular technique. The yellow powder is packed in ampoules ready for dissolving in sterile water, no local reaction occurs at the site of injection, and the administration itself is painless. If treatment is commenced with a minimal dose, increased gradually, infants and small children can be treated with safety. The powder should be dissolved in distilled water immediately before use—1 c.cm. of water for each 0·05 g. up to a maximum of 3 c.cm. Whenever possible the solution should be made in the ampoule by first drawing the required amount of the distilled water into the syringe and then injecting the water into the ampoule. In the treatment of children for congenital syphilis and in cases of syphilis where intravenous injection is contra-indicated sulphostab has its obvious advantages, and good results are claimed for it in disseminated sclerosis and chronic skin lesions.

Emulsion B. Acidophilus.—This preparation, which is made by Messrs. E. H. Spicer and Co., Ltd., Watford, Herts, has in the commercial list the mark "MorBacT" to indicate that it was introduced (under the name of "Bactol") by Morgenstern, and has been renamed on the suggestion of the Council of Pharmacy of the American Medical Association. It is an emulsion of the *Bacillus acidophilus* which, like *B. bulgaricus*, will establish itself in the bowel, the claim being that it does so the more easily and effectively, as being a normal inhabitant of the intestinal tract. The emulsion, in the medium of liquid paraffin and agar, has found considerable employment in intestinal troubles and especially as a remedy for constipation. The good results obtained are substantiated by many medical contributions to the *Journal of the A.M.A.*, in all of which its value in intestinal toxæmia is brought out.

New-Promonta is an organic food preparation containing the lipoids of the central nervous system combined with the carriers of the known vitamins, lime, iron, hæmoglobin, highly concentrated albumins, and carbohydrates. The significance of lipoid substances in relation to cell economy has been noted by many bacteriologists, so that it was natural that experiments with the new food should be freely conducted. As a result the literature on the subject is considerable, one of the most detailed contributions appearing in the *Münchener Medizinische Wochenschrift* from Prof. E. Friedberger and his assistants. Their experiments have been made at the Research Institute of Hygiene and Immunity at Berlin-Daheim, and were made to ascertain the effect on rats of various kinds of bread exclusively after the ingestion of New-Promonta. The work was done at the instance of, and supported by, grants from the Academy for Women's Social and Pedagogis Work, the Imperial Ministry of Food and Agriculture, and the Prussian Ministry of Agriculture. It may be summarised by saying that the results of mixing New-Promonta with bread pointed clearly in some cases to a rise in nutrition. The preparation (which is obtainable from the Promonta Company, Ltd., 127–131 Regent-street, London, W. 1), it would appear from evidence received in this office, may be applied beneficially in various neurotic conditions, owing to its nutritive qualities.

From the British Organotherapy Company, Ltd., we have received a list of *Pluriglandular compounds* containing some new preparations which, it is claimed, have proved of considerable value in the conditions indicated. The compounds are presented in capsule form, in which form the activity of the glandular substances is best preserved. They include "Opocaps" Obesity Co. (male and female). "Opocaps" Pit-Mammary Co., indicated in menorrhagia, metrorrhagia, &c.; "Opocaps" Pit-Ovarian Co., indicated in amenorrhœa, dysmenorrhœa, &c.; "Opocaps" Pluri gland (male and female), indicated in asthenia, hypotension &c.; and several others. All the dosages in the compounds are stated to be adequate and in accordance with prove practice.

Messrs. Roberts and Co., of 76, New Bond-street, London W., inform us that *Elixir Sedoval*, a bromide salt of strontium combined with an extract of valerian, upon which we commented in these pages recently (Jan. 14th, p. 114), will to avoid a certain confusion that has occurred, be known as *Roboval*. A tablespoonful of *Roboval* contains grs. 6 of strontium bromide and 12 minims of extract of valerian and such a dose may be taken two or three times a day varied in accordance with the directions of the physician.

THE CARBON ARC IN THERAPEUTICS.

A BOOKLET with this title from the Amalgamated Photographic Manufacturers, Ltd. (3, Soho-square, London W.1), opens with a brief historical survey of light treatment and goes on to enumerate the conditions likely to be benefited by the use of artificial light. Emphasis is laid upon the reports of two workers (references given) that the carbon arc is better than the mercury vapour or tungsten for tuberculous adenitis or arthritis and for hyperpiesia. The spectra of different U.V. generators are compared and the claim is made that the carbon arc is the only therapeutic source directly comparable to the sun's radiation. The low U.V. region—i.e., 3000 to 2000 A.U.—is designated as noxious to the human organism, the erythema and pigmentation it produces being a protection against this harmful part of the radiation. Some improvements in open carbon arcs are described, including the multiple arc and the magnetic blower for lengthening the arc without necessitating an increase in the separation of the electrodes. The older arcs used very large currents, but the lamps described get a similar output by utilising impregnated carbons. Spectrographs of the metals in common use are shown; they extend well down into the low U.V. region and show the characteristic line spectra. The carbons advocated for use with the Marion lamp are the "Natural Sunlight," an impregnated type, but no spectograph is given showing the distribution of their output. The last section of the pamphlet deals with the Marion improved therapeutic multiple carbon-arc lamp. Several floor types are described and an overhead hanging model in which a silica tray catches any particles falling from the burning carbons. All the lamps are suitable for AC or DC and have four pairs of carbons in series (presumably for use on voltages above 200 —i.e., 50 volts per arc). Hand or automatic starting is available and a clever hand-operated rheostat coupled with the striking gear is available, the object of this device being to prevent the usual high current which flows when striking an open arc with a low value of resistance in circuit. All the lamps on the list are protected under Boardman patents and are obtainable by medical men through the usual agents.

FRANKLIN'S SUPER SURGEONS' GLOVES.

BY a new process Messrs. J. G. Franklin and Son, Ltd., 15, Colvestone-crescent, London, E. 8, are manufacturing surgeons' rubber gloves which do not easily tear or perish and which withstand repeated sterilising. It is claimed that the gloves do not harden in cold weather, and that they may be kept an indefinite period in any climate without fear of cracking, provided they are put in boxes or containers. The gloves are made with a smooth or roughened finish and their resistance of temperature indicates that they might be useful to surgeons accompanying expeditions.

[1] THE LANCET, 1927, i., 690.

Hunterian Oration

ON THE

PROGRESS OF SURGERY FROM HUNTER'S DAY TO OURS.

Delivered before the Royal College of Surgeons of England on Feb. 14th, 1928,

BY SIR HOLBURT WARING, M.S. LOND., F.R.C.S. ENG.

SURGEON TO ST. BARTHOLOMEW'S HOSPITAL, ETC.

TO-DAY, Mr. President and Gentlemen, we celebrate the two-hundredth anniversary of the birth of John Hunter, the founder of modern scientific surgery, the creator of our Museum, and the patron saint of our College. Since 1814 an oration—the Hunterian Oration—has been given, at first annually and then, after 1856, biennially, in this College in his memory. A large proportion of these orations have dealt with one or more of the numerous branches of Hunter's activities; in fact, it has always seemed to me that there is scarcely any part of the work of Hunter which has not been commemorated in one way or another in one of these orations.

On examining the conditions as given in the trust deed which created this oration it is stated that—

"The Oration is to be delivered in the theatre of this College on the 14th February and such Oration is to be impressive of the merits in Comparative Anatomy, Physiology and Surgery not only of John Hunter but also of such persons who have become deceased, whose labours have contributed to the improvement and extension of surgical knowledge."

The provisions of the trust creating this oration being so wide, I have thought it advisable on this occasion—the bicentenary of the birth of John Hunter—to devote the time allotted to me for the purpose and give a short review of the progress of surgery since Hunter's day to ours, in the course of which I propose to make reference to a few of the most distinguished scientific investigators, the results of whose work have proved to be of the greatest value to the science and practice of surgery.

Hunter has been regarded quite rightly, both in this country and to a lesser extent in foreign countries, as the practical founder of modern scientific surgery. After his earliest surgical days (1760–70) he formulated the idea that it was absolutely essential for a practising surgeon—who wished to practise his art with the greatest prospect of success and benefit to his patients—to have a very close and detailed knowledge of the structure and functions of man in health; that he should also be familiar with, again in every detail, the changes which take place in man during the onset, course, and development of any disease, which he is called upon to treat; and furthermore, that he should also have a comprehensive and detailed knowledge of the vital processes which take place in the tissues of the patient during the period of recovery from disease and after the performance of a surgical operation.

From these facts it will be seen Hunter fully realised that a minute and thoroughly comprehensive knowledge of the pathological processes occurring in inflammation and growth is the real basis of a considerable amount of practical surgery. This holds to the present day.

The method of investigation which Hunter appears to have carried out when examining any subject was the following. He first made himself master of the details and minute structures of an organ or tissue and then investigated its functions. In making these investigations he did not hesitate to compare the structures and functions of animals with those of man. After having made this extended structural and functional examination he reflected upon and reviewed the whole and then came to conclusions. After he had done this he then in a similar way investigated the structure and functions of organs and parts of living bodies in connexion with the onset, course, and result of disease. This consideration of structure and function in normal conditions, followed by a consideration of the structure and function in similar diseased conditions, is really the basis upon which Hunter commenced to make surgery a real science. He for one thoroughly understood that in order to fully comprehend the nature of a disease of an organ it is absolutely essential to be familiar with the structure and functions of such an organ under healthy conditions.

PHYSIOLOGY.

In connexion with the ideas which were formulated by Hunter concerning the practice of surgery, it is very interesting to read his physiological works and his speculations on the "basis of life." The condition of physiology in Hunter's student days was very little advanced. Hunter himself appears to have derived a considerable portion of his knowledge of physiological processes occurring in man from his direct observation of similar processes occurring in animals and even in plants, in addition to the modifications which he observed in man during the treatment of his patients.

The Vital Principle.—Concerning Hunter's speculations on the "basis of life"—he calls it the "vital principle." Hunter, like every true physiologist, instead of trying to theorise as to what was the exact chemical or physical basis of life, investigated all the signs and conditions under which life shows itself, and also dissected where possible, or examined in minute detail, all structures which showed signs of life. By these means he was able to formulate within his own mind what he himself understood by life or the "vital principle," or whatever the condition may be called.

Hunter believed that "life existed in every part of the animal body" and this life, or "vital principle," made every part of the animal body susceptible to the impressions which excite action. Animal matter he considered as a special or peculiar combination of other matter, and this animal matter, when endowed with life, had something added to it which he called "an arrangement of the most minute particles" or the "principles of life." His own crystallised conclusion as regards life may be expressed thus: "Life is a power superadded to matter, and is a property we do not understand; we can only see the necessary steps to it."

Since Hunter's day every advance in our knowledge of chemistry and physics has been used in attempting to explain the onset and course of disease, and the actual biochemical and biophysical processes which occur in living matter or matter endowed with the characteristics of life. So far, however, these researches have given us more enlightened ideas of the chemical and physical conditions under which "life" may exist and may be destroyed, but no ultimate chemical or physical explanation has been discovered of the true or real chemical or physical basis of life.

The first subject which I wish to discuss as being of supreme importance in the progress of surgery is what is now called

IMMUNITY AND PREVENTION OF DISEASE.

During the period of Hunter's life (1728–93) little or nothing was suspected or known of what we now describe as immunity. Jenner (1749–1823), an intimate friend and pupil of Hunter, was the first medical practitioner in this country to appreciate the great value of inoculation against disease. He noticed in his practice that milkmaids who had contracted cow-pox from the udders of cattle when milking did not take small-pox. According to Baron,[1] in his "Life of Dr. Jenner," the first inoculation was performed by Jenner upon a country boy aged 8½ years (named James Phipps), in May, 1796. He inoculated the boy with the matter obtained from vesicles upon the skin of a milkmaid suffering from cow-pox. Almost two years later in a similar manner he inoculated his own son along with several other children. As a result of these investigations inocula-

[1] Baron, J.: Life of Dr. Jenner, 1838, ii., 44.

tion of children with the exudation from the vesicles of persons suffering from cow-pox was used as a protection against the possible subsequent development of small-pox.

As we all now know, laity and otherwise, the ravages of small-pox have practically been set aside in this country by the systematic practice of vaccination. It is a very rare occasion nowadays in England to meet with anyone who has features disfigured with pits, the result of previous small-pox.

Biochemistry.

The discoveries in biochemistry, such as those of v. Behring (1854–1917), Koch (1843–1910), Ehrlich (1854–1915), and Wassermann (1866–1925), have given us very valuable means both of diagnosis and treatment.

Diphtheria Antitoxin.—v. Behring, in 1890, discovered the antitoxin of diphtheria and found that by injecting this antitoxin into patients affected with the disease diphtheria could be controlled and rendered practically innocuous. Up to that time a considerable proportion of patients suffering from diphtheria died from one condition or another, a large number of them having to be submitted to tracheotomy on account of laryngeal obstruction due to diphtheritic membrane. In England, at the present day, owing to the general use of v. Behring's diphtheria antitoxin, it is extremely rare to see a patient suffering from diphtheria in whom tracheotomy is necessary. At St. Bartholomew's Hospital, in my student days, tracheotomy for tracheal obstruction due to diphtheria was a very common operation. Nowadays it is practically never seen. In 1890 the number of patients treated in this way was 47 and in 1927 there were none.

Antitetanic serum, which was discovered by v. Behring and Kitasato in 1892, was used extensively in the prevention and treatment of tetanus during the Great War. The soil of the low-lying lands of Flanders is said to be almost always infected with the bacillus of tetanus (discovered by Nicolaier in 1884); hence gun-shot wounds sustained by soldiers in this area were prone to become infected with the organism which caused an attack of tetanus. It has been stated that the death-rate among inoculated soldiers suffering from tetanus during the Great War was 23 per cent., as compared with 53·5 per cent. in those who had not received preventive treatment. Other diseases which have been treated successfully either by prevention or cure in a similar biochemical manner are hydrophobia, typhoid, and anthrax.

Many attempts have been made to render patients immune from streptococcus infection by the injection of vaccines. At the present time, however, it does not appear that any certain remedial measure, biochemical or otherwise, apart from surgical asepsis, has been found which can be relied upon for absolutely preventing the occasional occurrence of a streptococcal or staphylococcal infection after an operation. Some success has been claimed to have been obtained with antistreptococcal serum in connexion with possible infection, but the exact value of this is not clear at present. Certainly, in my experience, there is no streptococcal antitoxin or serum which can be injected into a patient and be relied upon to absolutely prevent or cure infection with virulent pathogenic streptococci in all cases.

Insulin.—The biochemical researches of Banting and Best, of Toronto, in 1921 and subsequently, led to their discovery in, and isolation from, the pancreas of a substance which was named "insulin." The administration of this substance so improved the metabolism of carbohydrate material by diabetic patients that in many cases operations which previously had been thought inadvisable and dangerous have been rendered possible, and the lives of a large number of patients very considerably prolonged. Best has recently stated that in his opinion the lives of about 200,000 diabetic patients have been temporarily saved by the use of insulin.

Anæsthesia.—Another most important epoch in the progress of surgery was the discovery of general and local anæsthesia. Although a certain amount of anæsthesia, usually induced by inhalation or taking internally of narcotic substances, such as mandragora, hyoscyamus, certain types of hemp, and opium, had been practised during surgical operations in early days; in Hunter's time this method of alleviation or diminution of pain seems to have been practically entirely forgotten and to have gone out of use.

As I have already said, every discovery of importance in chemistry and physics which has been made since Hunter's day can truthfully be said to have been utilised sooner or later by application to surgical diagnosis and treatment. Thus the discovery of hydrogen in 1766 by Cavendish, nitrogen in 1772 by Rutherford, and oxygen and nitrous oxide gas in 1774 by Priestley, were the real beginnings of the application of chemical substances for the production of anæsthesia in surgical operations. Nitrous oxide gas appears to have been made use of first as an anæsthetic for the diminution of pain in the extraction of teeth. It is stated that Humphry Davy, about 1800, had used this gas for the alleviation of pain due to a diseased tooth. He afterwards stated as a result of this experience that "nitrous oxide seems capable of destroying pain. It may be used in surgical operations where there is no great effusion of blood." Unfortunately, this suggestion of Davy's was not made use of by surgeons, and it was almost 50 years later that the value and use of nitrous oxide gas for the induction of anæsthesia was appreciated and understood. Faraday, another chemist, seems to have been one of the first to recognise the anæsthetic properties of ether. In 1818 he pointed out that "when the vapour of ether is mixed with common air and inhaled the effects are similar to those caused by the inhalation of nitrous oxide."

From this period onwards a number of observers made use of the inhalation of gases to diminish pain during surgical procedures. Henry Hill Hickman—a young man—who became a Member of this College in 1820 and practised in Ludlow, Shropshire, from 1820–28, made experiments, in the autumn of 1823, on the possible anæsthetisation of animals, at first with carbonic acid and then with nitrous oxide. His proposals concerning the use of nitrous oxide gas for the production of anæsthesia and its utilisation in connexion with surgery were received very sceptically and generally condemned by the surgical profession of this country. So much so that he communicated with the King of France asking that an inquiry be made by the physicians and surgeons of that country as regards the value and correctness of his experiments. The communication was sent to the Académie Royale de Médecine de Paris, which body appointed a committee to investigate the matter. Nothing, however, came of this, although Hickman requested that he might be allowed to demonstrate the result of his experiments to the Paris Academy. Unfortunately, this young and enterprising surgeon died from tuberculosis the following year at the age of 29.

Inhalation of ether and also of chloroform seems to have been practised as a means of intoxication by young men in the fourth decade of the nineteenth century. At first the drug was only inhaled to produce intoxicating results, but by an accident its anæsthetic properties were discovered. In 1839 a negro boy, who appeared at a festivity in Athens, Ga., while ether was being inhaled by the participants, refused to take part. Some of the youths forcibly placed a handkerchief soaked with ether over his mouth and nose. After a struggle the young negro became quiet and his tormentors desisted. Instead of getting up he remained asleep and did not wake up until one hour afterwards. This seems to be the first instance of prolonged anæsthesia by the inhalation of ether.

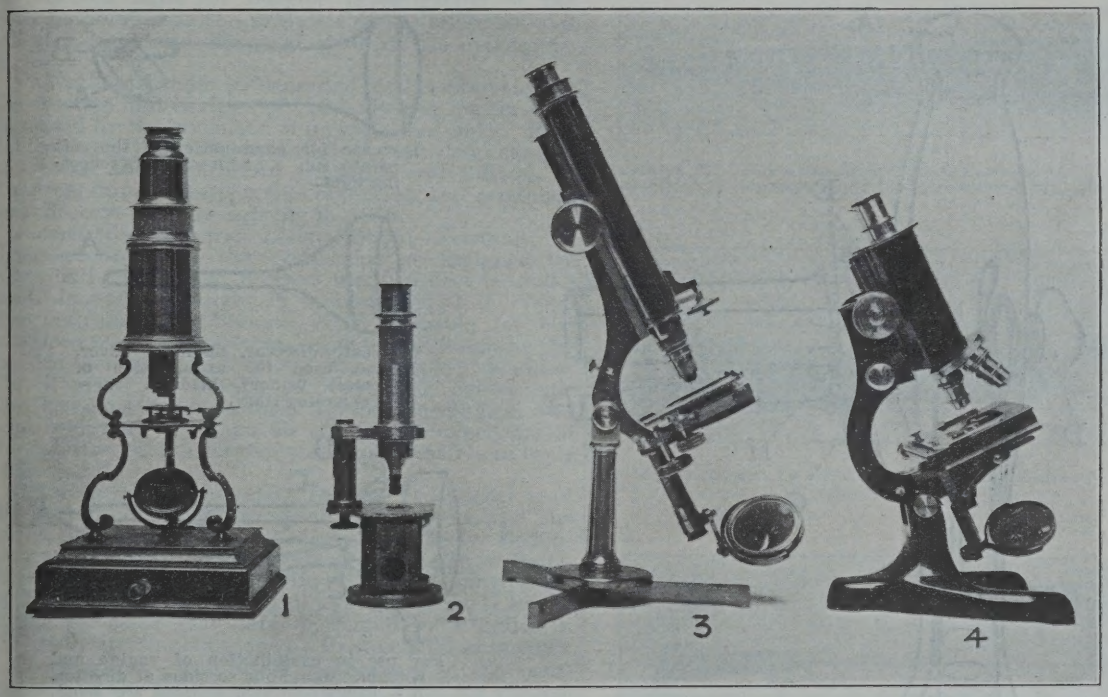
Crawford Long, a medical practitioner in Georgia, appears to have been the first American surgeon to make use of ether in the production of anæsthesia during the performance of a surgical operation. On March 30th, 1842, he gave ether to a patient for the removal of a tumour from the neck. This case being so successful Long continued to make use of ether

gical operations, and performed eight such operations between 1842–45. Long, although he made no secret of his discovery, did not publish the fact to the world, and it was not until others had made a similar discovery that his experience became generally known. Two years later, in 1844, Wells, a dentist in Hartford, Conn., made use of anæsthesia by nitrous oxide for the extraction of teeth. Although Wells had attempted to produce anæsthesia with ether, he had not been able to continue to do so owing to the difficulties and choking sensations which were produced. Morton, however, who had been a pupil of Wells, was familiar with the properties of ether and independently discovered its anæsthetic qualities four years after Recently a most important combination which has been made use of is that of nitrous oxide, oxygen, and a small amount of ether or chloroform. This combination is especially useful and safe when administered by the intratracheal method.

Local Anæsthesia.

Cocaine.—I now come to "local anæsthesia." Cocaine as an alkaloid was first isolated apparently by Godeke about 1855 and some points as regards its power of producing local anæsthesia were noticed. No definite advances were made, however, until 1874, when Bennett showed that cocaine, applied to living tissues, had the power of causing local anæsthesia.

Fig. 1.



Illustrates examples of microscopes used from Hunter's day to ours, including those used by Pasteur and Lister. 1 = Microscope of 1760. 2 = Microscope used by Pasteur. 3 = Microscope used by Lister in his work on the circulation in the frog. 4 = Microscope as used to-day.

[*Copyright: Wellcome Historical Medical Museum*

discovery by Long. Apparently the first public exhibition of surgery without pain was given in Massachusetts General Hospital in October, 1846, when a patient was operated upon by Warren for removal of a vascular tumour of the neck after being anæsthetised with sulphuric ether.

Ether was first used in England for the induction of general anæsthesia during the performance of an operation (removal of a tooth) in December, 1846, and two days later ether was administered to patients at University College Hospital by Squire for Liston, who amputated the lower extremity through the thigh in one patient, and also in another removed an ingrowing toe-nail. During the following year (1847) Simpson, of Edinburgh, used ether in obstetric practice and found the pains of labour could be abolished thereby, whilst the uterine contractions were not interfered with. The next year (1848) Simpson, who was somewhat dissatisfied with the use of ether on account of the irritation which it produced in the lungs and bronchial passages, first made use of chloroform. This substance was first discovered at about the same time by Soubeiran (in 1831) and Liebig (in 1832), and its composition was first accurately described by Dumas in 1835. Since this period (1847–48) ether, chloroform, nitrous oxide, in many and various combinations, and other substances, have been used for the induction of surgical anæsthesia. V. Anrep, however, in 1878 appears to have been the first to completely investigate the anæsthetic properties of cocaine by injecting a dilute solution (0·003–0·5 per cent.) underneath the skin, and in connexion with this made the suggestion of its possible value for producing anæsthesia for surgical operations.

In the following year (1879) its powers of producing local anæsthesia were demonstrated in connexion with the eye. This use of cocaine was worked out in complete detail by Karl Koller, who showed that complete anæsthesia of the eye could be produced by the use of a 2 per cent. solution. The results of Koller's experiments were first published and discussed at an ophthalmological congress in Heidelberg in 1884. Since then this drug has been used increasingly for the production of anæsthesia in all kinds of surgical operations. In the early stages of its use some difficulties were met with in connexion with poisoning by absorption, but these were soon overcome.

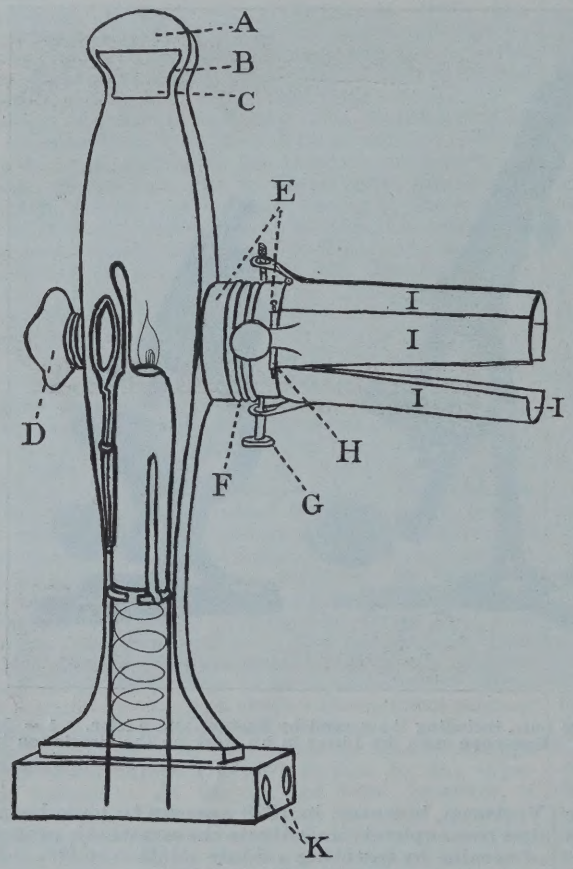
Novocaine.—Considerable progress in the method of induction of local anæsthesia has been made since that date by the discovery of novocaine, a synthetic product derived from coal-tar (para-amido-benzoyl-diethyl-amino-ethenol hydro-chloride), by Alfred Einhorn in 1905. So much so that at the present time a considerable number of major surgical operations, such as removal of tumours of the thyroid, gastrostomy, radical operation for hernia, and

even almost any major and minor operations, can be done painlessly and in certain cases with greater safety to the patient, by the use of a dilute solution of novocaine, administered by the infiltration method.

Stovaine.—Another variety of anæsthesia, or analgesia—spinal—can be induced by the injection of a solution of stovaine into the lower portion of the spinal theca. This form of anæsthesia is especially used in operations on the portion of the body below the diaphragm, such as prostatectomy or hysterectomy, when there are contra-indications, such as affections of the lungs, to the administration of a general anæsthetic.

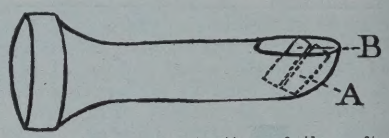
The net result of all these discoveries and improvements in connexion with surgical anæsthesia—general and local—is such that almost any desirable and justifiable operation can now be performed by the dexterous surgeon well trained in anatomy and technique, painlessly and with very slight anæsthetic risk to the patient, when the administration of the anæsthetic is carried out by a well-trained anæsthetist.

FIG. 2.—BOZZINI'S URETHROSCOPE.

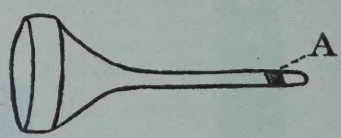


COMPLETE INSTRUMENT.

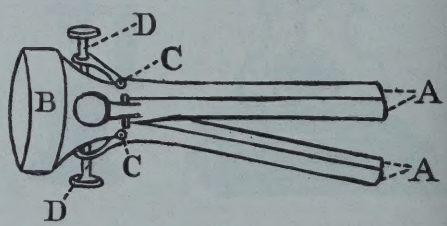
A = Hollow spherical globe forming top of instrument. B = Rods of metal supporting A. C = Aperture into which damp sponge can be inserted. D = Eyepiece (expanding). E = Expanding connective piece, giving free movement of each director. F = Expanding leather or metal rings. G = Screw for expanding section I. H = Hinges. I = Sections of director. K = Air aperture, leading up to light.



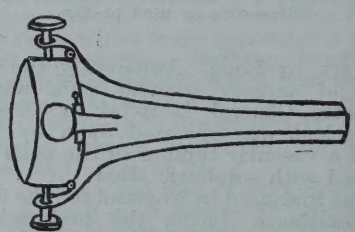
Director for examination of the soft palate, &c. A and B = Mirrors reflecting light.



Delicate director, made of silver, and used for examination of female urinary bladder. A = Expanding rings.



For use in examination of vagina and rectum. A = Four sections of director. B = Rings to which sections are fitted. C = Hinges attached to B. D = Screws for widening director.



Improved model of above figure.

PATHOLOGY AND MICROSCOPICAL DIAGNOSIS.

The publication of Virchow's (1821–1902) work on "Cellular Pathology" in 1858 was a great incentive to surgeons to study the histological basis of a considerable number of surgical diseases, especially all forms of new growth. From this period (1858) to the present time there has been a continuous advance in our knowledge of the pathology of surgical affections, one of the latest, perhaps, being the recognition of the different histological characteristics of malignant growths. This has enabled surgeons to be in a mu better position as regards giving a correct prognos after an operation for malignant disease. The advances have been made possible by the improve construction of the microscope and the knowledge the reactions of human and other tissues to differe varieties of dyes and stains. The improvements whi have been made in the microscope since Hunter's da have been very considerable. In Hunter's time th microscope was an instrument which was little mo than a simple magnifying lens.

Compound Microscope.—The principles of th compound microscope were discovered and develop by many physical observers, one of whom was Josep Jackson Lister, the father of Lord Lister, in 18

The discovery of the principle of the homogene immersion lens, followed by great improvem in the construction of lenses, which were ca apochromatic, have enabled a large number researches in histology and bacteriology to be possi Fig. 1 illustrates examples of the microscopes in se from Hunter's day to ours, including the microsco used by Pasteur and Lister. (Fig. 1.)

Use of Reflected Light.

The first surgeon to utilise reflected light in h investigation of deep spaces or cavities of the body a Bozzini,[2] of Frankfurt-am-Main, who invented in 1805, a form of urethroscope and also other form

[2] Bozzini, Dr.: Lichtleiter, eine Erfindung zur Anscha innerer Theile und Krankheiten, Neues Jour. d. p Heilkunde, 1806, xvii., 107.

"-scopes." Each consisted of a hollow tube along which light was reflected by a mirror. (Fig. 2.) No practical results, however, emanated from this discovery at the time, and its use remained quiescent apparently for a considerable period.

The next observer to make use of reflected light in the examination of patients was Helmholtz, who invented the ophthalmoscope in 1851. The original ophthalmoscope which he invented was, as regards its success in working, dependent upon the reflection and concentration of a source of light, usually a candle or a lamp. By its use ophthalmology became established on a scientific basis. Soon afterwards, in 1855, Manuel Garcia invented the laryngoscope, which was used by Toek, of Vienna; then followed the rhinoscope, discovered by Johann Czermak in 1859. Nitze and Leiter made the most rapid advances in the utilisation of reflected light for interior investigation of the body by combining the principle of the telescope and reflected light and the production of the cystoscope in 1877.

The value of these instruments for investigation of the recesses and cavities of the body was enormously increased by the invention of incandescent light. Paul Jablochkov, in 1876, invented the electric candle, and Swan and Stearne, of England, and Edison, of America, improved upon this invention and produced incandescent electric lighting in 1880.

Incandescent Electric Light.—David Newman, of Glasgow, improved the cystoscope as designed by Nitze and Leiter, and in 1883 was the first to make use of incandescent light in connexion with it. With this instrument it became easily possible for the practised manipulator to investigate and diagnose the various conditions affecting the urinary bladder. Fig. 3 gives the details of Newman's cystoscope. The laryngoscope was also further developed and improved, and the diagnosis of surgical affections of the interior of the larynx was made possible in their early stages.

Other forms of "-scopes" for the investigation of the interior of the body which rapidly followed the earlier discoveries were the sigmoidoscope by Bodenhamer in 1863, afterwards perfected by Kelly, of Baltimore, and Strauss, of Berlin; the œsophagoscope by Kussmaul in 1869, as well as the first gastroscope during the same year (later perfected by Mikulicz in 1881, and the bronchoscope by Gustav Killian in 1898.

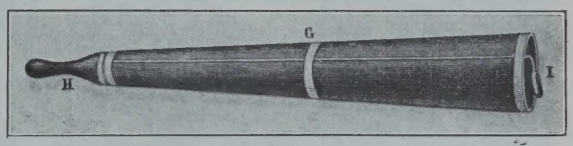
Thoracoscope.—The latest application of the combination of the telescope and electric light for clinical and diagnostic purposes is the thoracoscope. This is in reality a slight modification of the straight cystoscope such as is used for the investigation of the urinary bladder in children. In using it a trocar and cannula are passed into the pleural cavity on the side which it is wished to investigate and an artificial pneumothorax is induced, and then the interior of the pleural cavity and anything projecting into it are visually investigated through the telescope of the instrument. A similar but much larger instrument is used for investigation of the interior of the stomach. In practiced hands the use of this instrument has given, in a limited number of cases, moderately good results, but in the diagnosis of doubtful cases the appearances seen through it cannot be looked upon as definitely pathognomonic. The practical value of the gastroscope, however, in diagnosis is problematical, owing to the difficulty of correctly interpreting the conditions seen through it, and the fact that it cannot be used easily when a patient has been anæsthetised.

Lithotrite.—One example of the application of improved mechanical methods to surgery was the invention of the lithotrite and vesical evacuator by Bigelow in 1878. With this instrument patients were successfully treated and cured of stone in the urinary bladder without any cutting operation. Since Bigelow's day the instrument has been considerably improved in detail, including the addition of a cystoscopic attachment, though the essentials are absolutely the same. Expert operators can obtain excellent results by this method. In hot and tropical countries such as Egypt and India, where stone is prevalent and the natives are not readily amenable to the discipline—aseptic and otherwise—necessary for a successful surgical operation, this method in the hands of the skilled operator has enormous advantages.

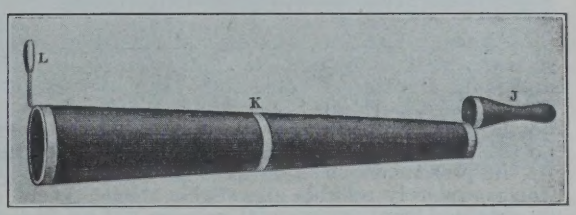
Bacteriology.

The next avenue of progress in surgery is that branch of biology and biochemistry which we call bacteriology. Hunter, of course, was ignorant of bacteriology, since bacteria had not been discovered in his day. It is of interest to note that in his surgical lectures, given in 1785, he states in connexion with fermentation: "Fermentation appears to be a process peculiar to dead vegetable or animal matter, and when

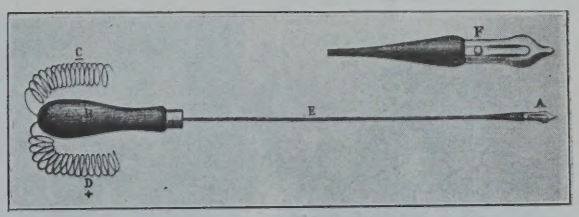
Fig. 3.—*Newman's Cystoscope.*



Speculum (G). Cover (to protect glass disc and facilitate introduction) in position, ready for introduction into bladder.



Cover (J) rotated by handle (L). In position after it has been introduced into bladder.



F = Electric lamp. A, B = Lamp and handle. Connected with the handle (B) by a thin rod (E), in which the wires from the battery run. The lamp, when connected with two Grove's cells, gives light equal to one candle.

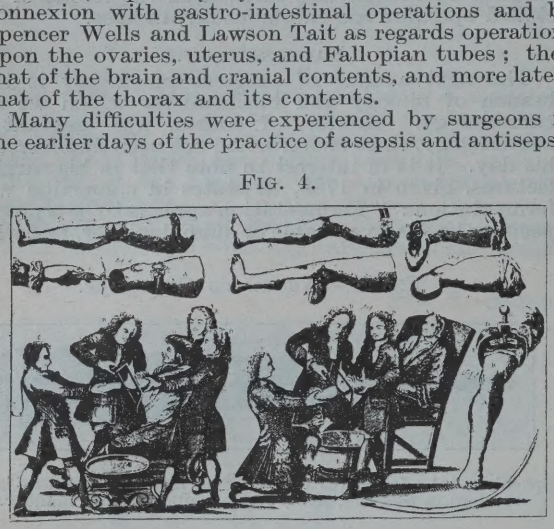
we find a tendency to fermentation we may conclude that there is a defect of the living principle." The modern science of bacteriology and its possible application to surgery really commenced in 1857, when Pasteur published his paper on Lactic Fermentation and subsequently his paper on the Influence of Oxygen on the Development of Yeast and on Alcoholic Fermentation in 1861.

Antisepsis and Asepsis.—The adoption by Lister of his antiseptic doctrine in connexion with surgery in 1867, which really followed the work of Pasteur, was the commencement of what may be known as advanced surgery on a scientific basis. The general acceptance of Lister's doctrine and its application to practical surgery was slow in this country. However, in the late 'eighties and early 'nineties its practice became general and was quickly followed by the aseptic doctrine. The practice of modern surgery is really based on a combination of antisepsis and asepsis, principally the latter. All the points, however, on the subject of Lister were discussed by you, Mr. President, on this day last year. It is sufficient for me to say that the practice of asepsis and antisepsis in surgical operations has enabled surgeons to submit to operation

with success every organ and almost every part of the human body. The surgery of the abdomen was first perfected, especially by von Billroth, of Vienna, in connexion with gastro-intestinal operations and by Spencer Wells and Lawson Tait as regards operations upon the ovaries, uterus, and Fallopian tubes; then that of the brain and cranial contents, and more lately that of the thorax and its contents.

Many difficulties were experienced by surgeons in the earlier days of the practice of asepsis and antisepsis

FIG. 4.

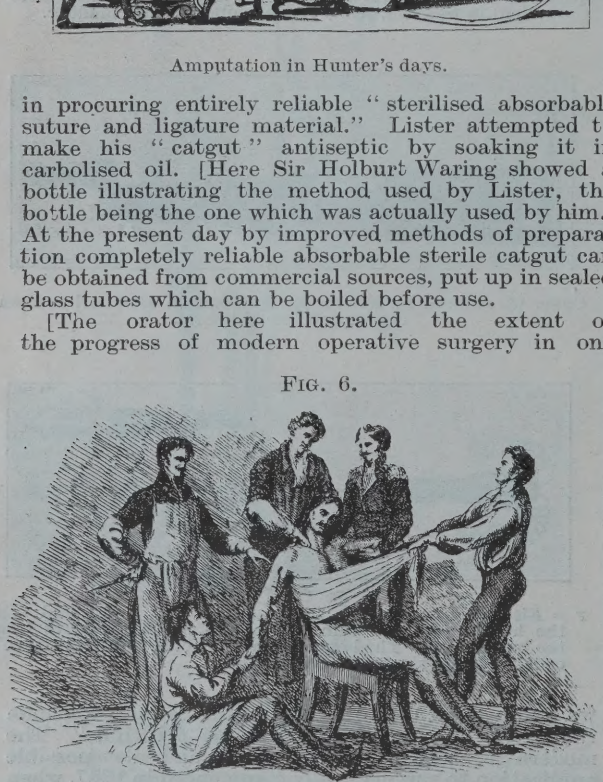


Amputation in Hunter's days.

in procuring entirely reliable "sterilised absorbable suture and ligature material." Lister attempted to make his "catgut" antiseptic by soaking it in carbolised oil. [Here Sir Holburt Waring showed a bottle illustrating the method used by Lister, the bottle being the one which was actually used by him.] At the present day by improved methods of preparation completely reliable absorbable sterile catgut can be obtained from commercial sources, put up in sealed glass tubes which can be boiled before use.

[The orator here illustrated the extent of the progress of modern operative surgery in one

FIG. 6.



Arrangements for operation in 1820. Amputation at shoulder.

aspect by a skiagram of a tumour of the chest in which the position, extent, and relations were shown. It was a representation of the chest being opened and a tumour removed, the patient having been anæsthetised and positive intratracheal pressure induced by the anæsthetist so as to enable the patient to breathe satisfactorily after the lung has collapsed.]

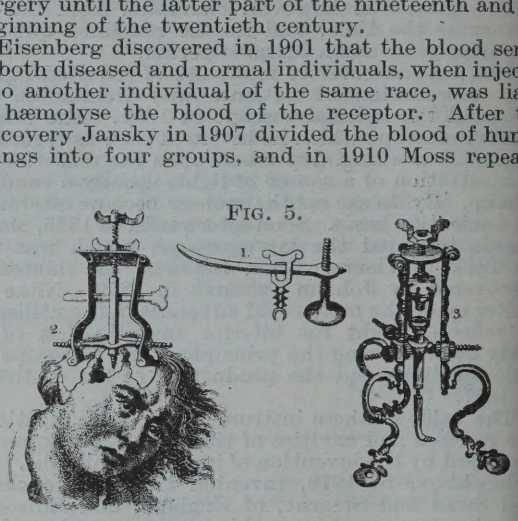
The net result of the practice of asepsis in operations is that infection of, and suppuration, in operation wounds is almost non-existent in most modern hospitals, and the mortality from surgical operation has been very greatly reduced.

TRANSFUSION OF BLOOD AND ITS APPLICATION TO SURGERY.

Transfusion of blood, either directly from one individual to another or indirectly, was first practised apparently on animals by Lower in 1665 and in man by Denys, of Paris, in 1667. No serious progress was made, however, in the application of this procedure to surgery until the latter part of the nineteenth and the beginning of the twentieth century.

Eisenberg discovered in 1901 that the blood serum of both diseased and normal individuals, when injected into another individual of the same race, was liable to hæmolyse the blood of the receptor. After this discovery Jansky in 1907 divided the blood of human beings into four groups, and in 1910 Moss repeated

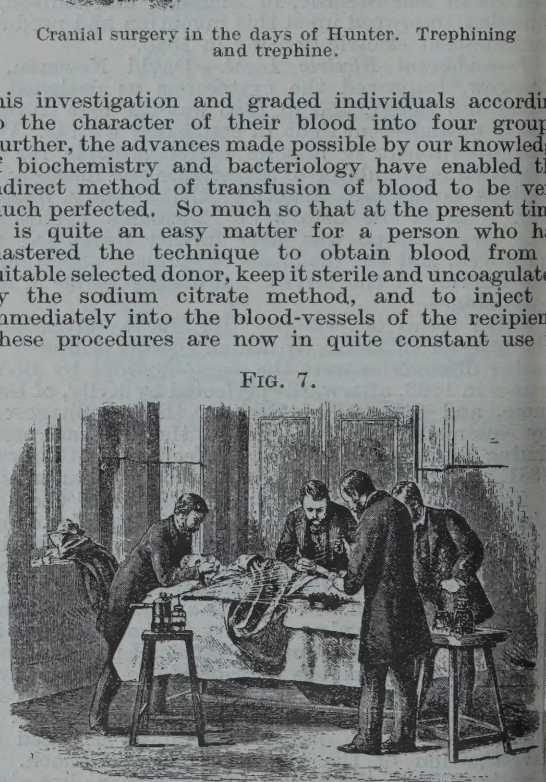
FIG. 5.



Cranial surgery in the days of Hunter. Trephining and trephine.

this investigation and graded individuals according to the character of their blood into four groups. Further, the advances made possible by our knowledge of biochemistry and bacteriology have enabled the indirect method of transfusion of blood to be very much perfected. So much so that at the present time it is quite an easy matter for a person who has mastered the technique to obtain blood from a suitable selected donor, keep it sterile and uncoagulated by the sodium citrate method, and to inject it immediately into the blood-vessels of the recipient. These procedures are now in quite constant use in

FIG. 7.



Operation being performed in early days of Listerian practice.

hospitals and surgical practice in certain types of serious injury or disease, especially when a large amount of blood has been lost by the patient, and have proved of great advantage in enabling operations to be done and the lives of patients saved thereby which otherwise would have been lost.

RADIOLOGY.

Another "milestone" in the progress of surgery between Hunter's day and ours is marked by the successive discoveries of X rays and radium.

The discovery of X rays by Wilhelm Roentgen (1845–1923), professor at Wurzburg, in 1895, was the commencement of a series of great advances in surgical diagnosis. At first the use of X rays in this direction was mainly confined to injuries to and diseases of the bones. When, however, the possibilities of this discovery were more appreciated and understood the

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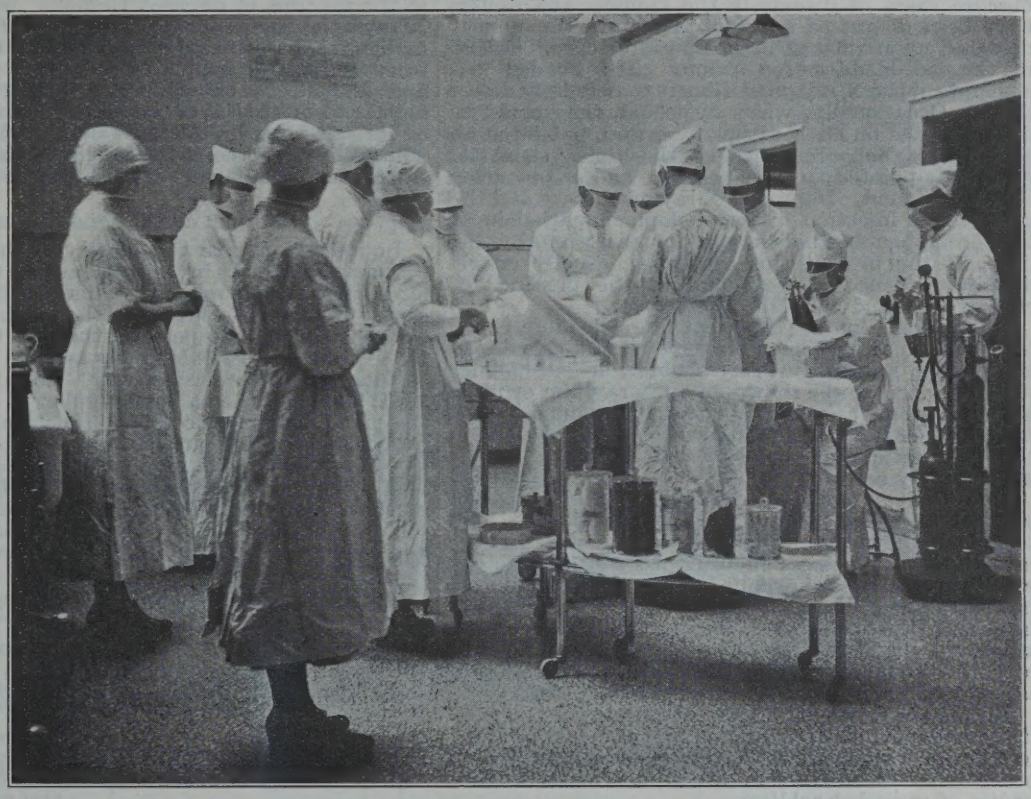
owths of the stomach, duodenum, narrowings in different portions of the alimentary canal, such as occurs in carcinoma of the œsophagus, or carcinoma of different portions of the alimentary canal, especially the lower portion of the large intestine above the rectum, was made possible. The determination of the position of deep-seated fistulous conditions between the viscera has also been made possible. As an example I saw demonstrated recently by this method a fistulous track between the surface of the body in the lower lumbar region and the lumen of the second portion of the duodenum.

FIG. 8.



A modern operation in course of performance: general arrangements.

FIG. 9.

An operation under modern aseptic methods: gastro-enterostomy.

The value of X rays in connexion with the diagnosis and treatment of disease has, in many cases and especially by the laity, been much exaggerated. To the practising clinician X rays, when intelligently and scientifically used, as we all know, can be of enormous advantage. They are of great value in the detection and localisation of different forms of calculi, especially those in the ureters and kidney. One of the later developments of the use of X rays in diagnosis is the investigation of the ureters and pelvis of the kidney by what is known as "ureterography" and "pyelo-

graphy." By these means of investigation many obscure cases of disease in the kidneys and ureters have been diagnosed satisfactorily and subsequently operated upon with great prospects of cure. Calculi in the gall-bladder for a long time evaded the attempts of the X ray practitioners to definitely detect them. Occasionally, when suspected, they could be demonstrated on an X ray plate or film, but often no evidence was apparent, although the clinical signs and symptoms pointed to their presence and at operation they were found. Improved X ray machinery and the intravenous injection of tetraiodophenolphthalein or tetrabromphenolphthalein and its excretion by the liver, at the present time, however, usually enable definite evidence to be found of the presence of cholecystitis and calculi in these cases.

As everyone knows, a patient is much more ready to submit to an operation for removal of a calculus in the ureters, kidneys, urinary bladder, or gall-bladder if its presence can be shown on an X ray film or plate than if it is only assumed. In a similar manner X rays have been of use in detecting the presence of stone in the pancreatic duct or deep-seated calculi in the submaxillary salivary gland.

One disadvantage of the use of X rays in diagnosis of surgical affections at the present time is the high technical knowledge which it is requisite for the investigator to possess in order to get satisfactory results in all classes of examination. X ray machinery, however, has been much improved and simplified of late and the principles of its use more understood, so that ordinary investigations can now be carried out more or less successfully by technical assistants.

During the Great War X ray diagnosis was increasingly made use of in the detection and localisation of injuries to bones and the presence of bullets and other metallic substances which had entered the bodies of wounded soldiers.

Following the discovery of X rays by Roentgen, Monsieur and Madame Curie in 1898 discovered radium in pitch-blend derived from mines in Joachimstal in Bohemia (now Czecho-Slovakia). The salts of this metal were found to possess very marked radio-active qualities and have been used, especially of recent years, in the treatment of various diseases and particularly in forms of new growth. There is no doubt that certain types of both sarcoma and carcinoma are very sensitive to the action of radium, and a number of patients have apparently been cured by the use of the salts of this metal. Radium has been applied in various ways, but in the treatment of disease the best results have been obtained either by the implantation of radium needles or radium seeds in the margins of diseased tissues. As in the case of X rays, the exact value of radium in the treatment of malignant disease cannot yet be determined. Unfortunately, a large supply of radium is very expensive and difficult to obtain. The indications, however, appear to be that if an increased quantity of radium or its salts can be obtained and made available for clinical use, then considerably improved results in the treatment of malignant disease may be made possible.

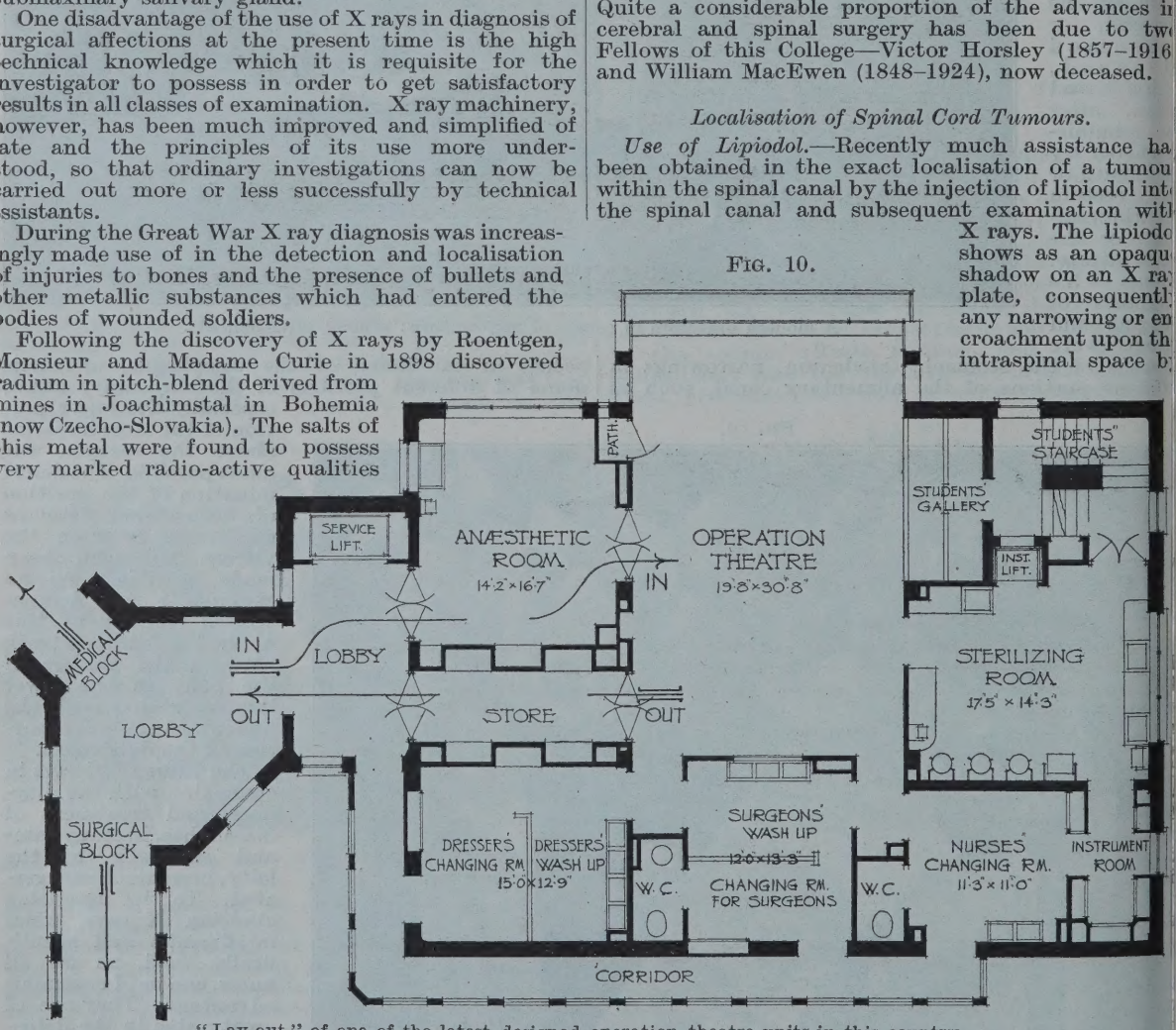
Cranium and Cranial Surgery.

In connexion with the surgery of the cranium and its contents Broca's investigations into the localisation of function and especially his localisation of the centre of articulate speech in the left frontal convolution enabled him to perform the first fixed operation for cerebral abscess, which was assisted by localisation of function in connexion with "motor aphasia," in 1861, and since then a large number of researches into the localisation of cerebral functions has enabled neurologists and neuropathologists to localise the site of a considerable number of intracranial growths. Quite a considerable proportion of the advances in cerebral and spinal surgery has been due to two Fellows of this College—Victor Horsley (1857–1916) and William MacEwen (1848–1924), now deceased.

Localisation of Spinal Cord Tumours.

Use of Lipiodol.—Recently much assistance has been obtained in the exact localisation of a tumour within the spinal canal by the injection of lipiodol into the spinal canal and subsequent examination with X rays. The lipiodol shows as an opaque shadow on an X ray plate, consequently any narrowing or encroachment upon the intraspinal space by

FIG. 10.



"Lay-out" of one of the latest designed operation theatre units in this country.

a tumour becomes evident. Similarly injection of lipiodol into the trachea, bronchi, and lungs, and subsequent examination by X rays has enabled the clinician to positively demonstrate on plate or film the extent and nature of abnormal intrathoracic conditions.

SPECIALISATION.

The numerous methods—chemical and physical—available to the clinician and the pathologist for the

vestigation of patients suffering from surgical fections are so varied that at the present time it is ot usually possible for one diagnostician to make all ie investigations which are necessary in the examina- on of an individual patient. Thus in the practice of irgery in the present day we have skilled specialists many branches, such as histology, biochemistry, rtology, bacteriology, and radiology, and further, in ie use of special instruments, such as the laryngo- ope, ophthalmoscope, cystoscope, sigmoidoscope, be treated in an institution built and equipped for the scientific investigation and treatment of disease.

Influence of Asepsis and Antisepsis on the Construction and Building of Surgical Hospitals and Operation Theatres.

The general adoption in surgical practice of the principles of asepsis and antisepsis was quickly followed by enormous improvements in the building and construction of surgical hospitals and operation

Fig. 11.

ows interesting examples of amputation knives from Hunter's day to ours. 1 and 2 = Curved amputation knives as used in Hunter's day. 3 and 4 = Amputation knives of period 1820. 5 and 6 = Amputation knives of present day.

[*Copyright: Wellcome Historical Medical Museum.*

id bronchoscope. This division of activities has led the establishment of specialist practitioners, many whom limit their activities, diagnostic and otherwise, one particular organ.

From the point of view of progress in surgery there no doubt that this specialisation, both in diagnosis id treatment, has been a very considerable advantage. his trend to specialisation in both diagnosis and eatment has become so marked that at the present me there is a tendency for specialist-practitioners to ork in teams, each one of a team taking specialised rtions of either investigation or treatment.

In practice this method of examination and treat- ent has been found especially feasible in connexion ith hospitals to which medical schools are attached. he formation of private clinics for the diagnosis and eatment on these lines for the non-charity patient is not been easy in this country. Many develop- ents, however, on these lines are now taking place hich will be of great advantage to the successful ractice of surgery in the future.

One great difficulty often arises in connexion with ie progress in surgery as regards its practical applica- on. This is the inborn desire of the Englishman to ave all forms of medical and surgical treatment rried out in his own house. Fortunately public inion is gradually being educated on this subject id there is an increasing tendency in educated embers of the community, of desiring, when ill, to theatres. In Hunter's day a small room, not specially built to fit it for the purpose, was generally made use of as an operation room. This practice of using any small and otherwise useless room for operations was continued until comparatively recently. In my own student days I well remember, in one of the large special hospitals in London, that the residents' sitting-room and dining-room were also used as the surgeon's operation and instrument rooms. The old method of erection of buildings was ill adapted for the practice of asepsis owing to the large number of angles, corners, crevices, wall and ceiling decorations, which formed collectors of dust, dirt, and associated micro-organisms.

Since the late eighties and early nineties enormous advances have been made in the construction of surgical wards and rooms used for surgical patients and also operation theatres. In the earlier days of the construction of the modern operation theatre considerable difficulty was experienced by architects and builders in providing absolutely smooth surfaces for floors, walls, and ceilings, which could be readily cleaned without being damaged or destroyed. At the present time the tendency in the construction of surgical operation theatres is to make them as simple as possible and to have all the sterilisation of equipment and instruments carried out by superheated steam or in some cases dry heat produced electrically in a room immediately adjoining the operation theatre.

In connexion with this subject the illustrations are of considerable interest, both as regards the operation room, operation table, and the equipment and personnel of the surgeon and his assistants. Figs. 4 and 5 illustrate operations being performed in the days of Hunter. Fig. 6 represents the arrangements for an operation in 1820. Fig. 7 represents an operation being performed in the early days of Listerian practice. In it can be seen the carbolic spray which was used for making the atmosphere in the region of the operation aseptic. Figs. 8 and 9 illustrate an operation being performed under modern aseptic methods.

As an illustration of the progress which has been made in ensuring surgical cleanliness and asepsis in an operation Fig. 10 gives the lay-out and design of one of the newest and most modern surgical operation theatre units in this country. The main point in connexion with this lay-out is the provision made for avoiding the entrance into the operation theatre of any individual or material which has not been rendered previously as aseptic as possible.

The progress of surgery, especially since the aseptic and antiseptic era, has been greatly assisted and rendered possible by improvements in the education and training of nurses. Without these improvements in the education and training of nurses it would be almost impossible to perform with success a large number of the major operations which are now regularly done in the practice of surgery.

Surgical Instruments.

Since Hunter's day there has been a gradual improvement in the size, shape, and finish of practically all surgical instruments. As illustrations of this, these are two instruments which I have taken from the case containing the Hunterian relics in our museum. The first one is a lithotomy knife used by Hunter. As you see it is a large unwieldy instrument of very coarse manufacture. This second one is a knife of a similar kind which may be used at the present time. The second is a flexible metallic catheter as invented and used by Hunter. Since that period the structure and manufacture of flexible catheters has been much improved, especially since the utilisation of rubber and its products.

Fig. 11 shows interesting examples of amputation knives from Hunter's day to ours. The specimen I show you was one in use in the days of Hunter. This form of knife continued to be used until the days of Anthony Carlisle, a former President of this College, who introduced the straight knife and discarded the curved and heavy form of knife. Since then the tendency has been for an amputation knife to become smaller and smaller until at the present day it is usual to use a short knife such as shown in the figure.

War Surgery.

The great progress in war surgery during the Great War was due to the utilisation, in all aspects, of previous discoveries in connexion with (*a*) immunity and prevention, (*b*) anæsthesia, (*c*) asepsis and antisepsis, and (*d*) X rays. The utilisation of these discoveries during the prolonged hostilities enabled operations of every magnitude to be carried out in advanced stations and hospitals within close distance of the firing-line. In addition the improvements in transport, motor and otherwise, contributed greatly to this progress.

Two points which I have already referred to in connexion with the progress of surgery had great bearing on the surgery of war. These were preventive typhoid inoculation and the use of antitetanic serum. Another important practice developed during the war in connexion with the treatment of recent contaminated wounds, the margins of which were lacerated or contused, was primary excision of all contaminated and contused tissues followed by immediate or delayed suture. By the practice of these methods and the advantages of improved transport, it was found possible during the war to treat patients at the general military hospitals in London within 24 hours after the wounds had been received. In a number of cases of wounds the margins of which had been excised, the cavity was packed with gauze soaked in flavine, or after amputation the stumps were treated in a similar way.

A further improvement in war surgery was the recognition of the fact that in many cases of suppurating wounds or badly lacerated limbs in which an amputation had to be performed, the wounds could be left open and treated by the Carrell-Dakin irrigation method. Free exudation and associated irrigation enabled the wounded surfaces to become clean and delayed suture of the wound could be carried out afterwards. As a result of the treatment of war wounds on improved biochemical and biophysical principles the mortality from gun-shot wounds and injuries was enormously decreased.

Radiology and Treatment of Disease.

As a further development of the application of radiology—X rays and radium—many diseases have been submitted to treatment by both X rays and radium for their cure. For example, "rodent ulcer" or basal-celled carcinoma, is thought by many to be amenable to cure when treated by the application of X rays. Other diseases have also been treated radiologically, especially some forms of new growth. In certain cases good results have been obtained, but at the present time it is difficult to dogmatise what is the true and permanent value of X rays and radium in the treatment and cure of disease, especially malignant disease.

Conclusion.

From the short account which I have been able to give you of the progress of surgery from Hunter's day to ours, it will be seen that the actual technique employed in the performance of surgical operations and the results which can be obtained thereby have reached a very high stage of perfection. It does not appear to me that we can expect in the future such great progress to be made in the details of the performance of operations themselves and the amelioration of the discomforts directly resulting therefrom. In my opinion the main lines of advance of surgery in the future will be along biochemical and biophysical lines both as regards diagnosis and treatment. If this assumption be correct it is essential that the medical student and the medical practitioner of the future should pay increased attention to all biochemical and biophysical problems—both in normal and diseased conditions.

Owing to the length of the curriculum and the multiplicity of subjects which the student of medicine of the present day has to pass through, there is a tendency for parts of the curriculum to be forgotten after the examination in it has been passed. Consequently the application of physiology in the investigation of disease is too often neglected and a student thereby is encouraged to acquire surgical knowledge —especially diagnosis—in a somewhat empirical manner. At the present time, however, there is a tendency in every modern school of medicine to give courses of "applied physiology and applied anatomy" during the later and clinical part of a student's educational career.

A NOTE ON JOHN HUNTER'S CARDIAC INFARCT.

By JOHN A. RYLE, M.D., F.R.C.P. Lond.,
ASSISTANT PHYSICIAN TO GUY'S HOSPITAL.

In a recent communication to THE LANCET[1] Dr. J. Parkinson and Dr. D. Evan Bedford have reported their experience and reviewed the literature of cardiac infarction and coronary thrombosis. By their careful and extensive survey of cases and pathological material they have amplified the work of other observers, establishing and defining the syndrome which characterises this grave vascular accident, and indicating its relationships with angina

[1] THE LANCET, Jan. 7th, 1928, p. 4.

pectoris. They have shown that the status anginosus generally proclaims a coronary occlusion and that, notwithstanding the gravity of the event and its high immediate mortality, survival is common and a return to a life of modified or even full activity not impossible. From the descriptions of anginal cases left to us by the great masters, including Latham, Osler, Clifford Allbutt, and Mackenzie, it is now possible to select indubitable examples of seizures due to this cause. It is noteworthy that Heberden himself mentioned a few cases in which the pain persisted for hours or days.

My own interest in the subject was first stirred on reading a paper by J. W. McNee.[2] A natural curiosity concerning the history of a clinical syndrome which has only lately been accorded accurate portraiture, but which must in fact be at least as old as arterial disease, has since been quickened by a personal experience of several cases and by a recent discussion at the Medical Section of the Royal Society of Medicine (Jan. 24th, 1928). Recollecting the minuteness of the clinical detail in Sir Everard Home's account of Hunter's illnesses I have carefully re-examined the narrative of these and particularly of his alarming vascular crises. The story of Hunter's angina, of his foreboding that his death might be precipitated by anyone who should anger him, and of his actual demise in such a circumstance, is common property, and has found its place in the text-books and been recounted to generations of students. It is not, I believe, so widely recognised that his very first seizure was, in all probability, due to a coronary thrombosis; that he survived it for 20 years; and that, on examination after death, two fibrotic scars were found in the wall of his heart.

The descriptions which follow are drawn from Joseph Adams's "Memoirs of the Life and Doctrines of the late John Hunter, Esq." (London, 1817), in which the author includes full quotations from Sir Everard Home's Life. Sir Everard Home's account was based on observations of his symptoms noted by Hunter himself at the time of their occurrence or dictated to Sir Everard Home when he was too ill to write. I have italicised some of the more apposite passages.

"In the spring of 1769, in his forty-first year, he had a regular fit of the gout, which returned the three following springs, but not in the fourth; and in the spring of 1773, having met with something which very forcible affected his mind, he was attacked, at ten o'clock in the forenoon, with a pain in the stomach, about the pylorus: it was the sensation peculiar to those parts, and became so violent, that he tried change of position to procure ease; he sat down, then walked, laid himself down on the carpet, then upon chairs, but could find no relief. He took a spoonful of tincture of rhubarb with 30 drops of laudanum, without the smallest benefit. While he was walking about the room, he cast his eyes on the looking-glass, and observed his countenance to be pale, his lips white, giving the appearance of a dead man: this alarmed him, and led him to feel for his pulse; but he found none in either arm. He now thought his complaint serious. Several physicians of his acquaintance were then sent for: Dr. William Hunter, Sir George Baker, Dr. Huck Saunders, and Sir William Fordyce, all came, but could find no pulse; the pain still continued, and he found himself at times not breathing. Being afraid of death soon taking place if he did not breathe, he produced the voluntary act of breathing, by working his lungs by the power of the will; the sensitive principle, with all its effects on the machine, not being in the least affected by the complaint. In this state he continued for three quarters of an hour, in which time frequent attempts were made to feel the pulse, but in vain; however, at last, the pain lessened, and the pulse returned, although at first but faintly, and the involuntary breathing began to take place. While in this state, he took Madeira, brandy, ginger, etc., but did not believe them of any service, as the return of health was very gradual; in two hours he was perfectly recovered."

Hunter was aged 45 at this time. The restlessness which he showed in the attack is now known, in contradistinction to the rigid immobility of ordinary angina, to be a not uncommon feature of coronary thrombosis. The reference of pain to the epigastrium is also a recognised feature and may sometimes lead to a faulty diagnosis of acute abdominal disease.

[2] Quarterly Journal of Medicine, 1925–26, xix., 44.

Writing a hundred years ago Joseph Adams was sage enough to argue, and in opposition to Hunter's own idea, that, although the pain was apparently in the stomach, the actual seat of it was in the heart.

"That the disease was in the heart can now admit of no doubt: the cessation of the pulse is what might be expected from violent inflammation, as will be hereafter explained; *but the strongest proof that the heart at that time suffered an alteration in its structure, the effect of inflammation, is, that for the remainder of his life the patient suffered all the effects of angina pectoris. . . .*"

In 1776 Hunter had a serious illness in which vertigo and sickness played a prominent part. In 1785 he had another serious illness.

"About the beginning of April, 1785, (Sir Everard Home informs us) he was attacked with a spasmodic complaint, which at first was slight, but became afterwards very violent, and terminated in a fit of the gout in the ball of the great toe; this, like his other attacks, was brought on by anxiety of mind. The first symptom was a sensation of the muscles of the nose being in action; but whether they really were, or not, he was never able to determine. This sensation returned at intervals for about a fortnight, attended with an unpleasant sensation in the left side of the face, lower jaw, and throat, which seemed to extend into the head on that side, and down the left arm, as low as the ball of the thumb, where it terminated all at once: these sensations were not constant, but returned at irregular times; they became soon more violent, attacking the head, face, and both sides of the lower jaw, giving the idea that the face was swelled, particularly the cheeks, and sometimes slightly affected the right arm. After they had continued for a fortnight, they extended to the sternum, producing the same disagreeable sensations there, and giving the feel of the sternum being drawn backwards toward the spine, as well as that of oppression in breathing, although the action of breathing was attended with no real difficulty: at these times the heart seemed to miss a stroke; and upon feeling the pulse, the artery was very much contracted, often hardly to be felt, and every now and then the pulse was entirely stopt. He was afterwards attacked with a pain in the back, about that part where the œsophagus passes through the diaphragm, the sensation being that of something scalding hot passing down the œsophagus. He was next seized with a pain in the region of the heart itself; and last of all, with a sensation in the left side, nearly in the seat of the great end of the stomach, attended with considerable eructations of wind from that viscus: these seemed to be rather spasmodic than a simple discharge of wind, a kind of mixture of hiccough and eructation, which last symptoms did not accompany the former, but came on by themselves. In every attack there was a raw sore feel, as if the fauces were excoriated. All these succeeding symptoms (those in the stomach and nose only excepted) were in addition to the first, for every attack began with the first symptoms. The complaint appeared to be in the vascular system, for the larger arteries were sensibly contracted, and sore to the touch, as far as they could be touched, principally in the left arm; the urine at those times was in general very pale.

These symptoms increased in violence at every return, and the attack which was the most violent, came on one morning about the end of April, and lasted about two hours. It began as the others had done, but having continued about an hour, the pain became excruciating at the apex of the heart; the throat was so sore as not to allow of an attempt to swallow any thing, and the left arm could not bear to be touched, the least pressure upon it giving pain; the sensation at the apex of the heart was that of burning or scorching, which, by its violence, quite exhausted him, and he sunk into a swoon or doze, which lasted about ten minutes, after which he started up, without the least recollection of what had passed, or of his preceding illness. I was with him during the whole of this attack, and never saw any thing equal to the agonies he suffered; and when he fainted away, I thought him dead, as the pain did not seem to abate, but to carry him off, having first previously exhausted him.

He then fell asleep for half an hour, and awoke with a confusion in his head, and a faint recollection of something like a delirium; this went off in a few days.

The affections above described were, in the beginning, readily brought on by exercise; and he even conceived, that if he had continued at rest, they would not have come on: but they at last seized him when lying in bed, and in his sleep, so as to awaken him. Affections of the mind also brought them on; but cooly thinking or reasoning did not appear to have that effect. While these complaints were upon him, his face was pale, and had a contracted appearance, making him look thinner than ordinary; and after they went off, his colour returned, and his face recovered its natural appearance."

This description clearly refers to a further series of vascular storms of a critical kind. May they possibly

have accompanied a second coronary thrombosis? This illness laid him low from the beginning of April until the latter part of May, and ended with an attack of gout. After it he remained more than ever subject to the angina of effort or emotion.

In 1789 he suffered a loss of memory and more vertigo. Between 1791 and 1793 his anginal attacks became increasingly frequent and more prolonged, and arrived for lesser causes.

"On the 16th of October, 1793, when in his usual state of health, he went to St. George's Hospital, and meeting with some things which irritated his mind, and not being perfectly master of the circumstances, he withheld his sentiments; in which state of restraint he went into the next room, and turning round to Dr. Robinson, one of the physicians of the hospital, he gave a deep groan, and dropt down dead!"

The body was examined after death and the findings in regard to the heart were reported as follows:—

"The pericardium was very unusually thickened, which did not allow it to collapse upon being opened; the quantity of water contained in it was scarcely more than is frequently met with, although it might probably exceed that which occurs in the most healthy state of these parts. The heart itself was very small, appearing too little for the cavity in which it lay, and did not give the idea of its being the effect of an unusual degree of contraction, but more of its having shrunk in its size. *Upon the under surface of the left auricle and ventricle, there were two spaces nearly an inch and half square, which were of a white colour, with an opaque appearance, and entirely distinct from the general surface of the heart: these two spaces were covered by an exudation of coagulating lymph, which at some former period had been the result of inflammation there.* The muscular structure of the heart was paler and looser in its texture than the other muscles in the body. There were no coagula in any of its cavities. The coronary arteries had their branches which ramify through the substance of the heart in the state of bony tubes, which were with difficulty divided by the knife, and their transverse sections did not collapse, but remained open. . . . The semilunar valves of the aorta had lost their natural pliancy, the previous stage to becoming bone, and in several spots there were evident ossifications. The aorta, immediately beyond the semilunar valves, had its cavity larger than usual, putting on the appearance of an incipient aneurism: this unusual dilatation extended for some way along the ascending aorta, but did not reach so far as the common trunk of the axillary and carotid artery. The increase of capacity of the artery might be about one-third of its natural area; and the internal membrane of this part had lost entirely the natural polish, and was studded over with opaque white spots, raised higher than the general surface. . . ."

To this account Joseph Adams added the following commentary:—

"The opake spot in the heart was probably formed during the severe illness of 1773, at which time the heart refused to act, the invariable consequence of high inflammation in a muscular part. Such is the immediate effect during the severe paroxysm of inflammation in the heart. The consequences for the remainder of life must depend on the alteration, if any, which had taken place from the inflammation. Sometimes the heart never recovers, and the circulation is carried on feebly till the patient expires, without any external cause: sometimes the heart is dilated by the afflux of blood on which it is at first unable to contract, and after a time contracts with irregularity, from an incapacity to acquire its original form. In Mr. Hunter's case, from an alteration in its texture, its actions became irregular; and consequently the action of the lungs. This constitutes angina pectoris, with which, Sir Everard Home informs us, Mr. Hunter was afflicted for the last 20 years of his life, the exact period of this illness."

If it be accepted—and it is difficult to offer any alternative explanation—that Hunter's first seizure was due to a cardiac infarction, it is surely a most remarkable feature of his case that he should not only have survived it for 20 years, but that for the greater part of that time he should have been able to devote himself to labours which continued to add lustre to his earlier fame. This chapter of Hunter's life which is concerned with his illnesses affords us a glimpse of the great strength of will and the scientific interest with which he constantly met them, and only serves to increase our admiration of the man. I do not know whether any parallel case can be quoted, but for the benefit of the physician faced with the delicate task of prognosis in this grave and disturbing malady it is at least gratifying to record that it may sometimes be consistent with long years of useful activity.

An Address
ON
VOLUNTARY HOSPITALS AND PUBLIC AUTHORITIES.*

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THE conception that coördinated effort is needed for furthering the health interests of communities is a comparatively modern one. Simon, in his "English Sanitary Institutions," in tracing the rise and early progress of British preventive medicine, insisted that it was the development of "a larger sympathy of man with man" that really marked, more than a century and a half ago, the turning-point in the history of the human race. This growth of the "new humanity" was favoured

"by two separate and dissimilar (though often coöperating) influences, one dating from the second quarter of the eighteenth century and one dating from the fourth, the former expressly religious . . . the latter essentially an outcome of stimulated political reflection. . . . Throughout the centennium, 1738–1838, the tide of religious philanthropy was ever on the rise, ever gaining more and more social influence."

Then at the close of that period there came "a rush to final success," culminating first in the Act of 1834, which,

"through the good luck that Mr. Edwin Chadwick was made the secretary of the New Poor Board, gave occasion a few years later, to a beginning of public sanitary inquiry in Great Britain";

and, secondly, in the Act, under which it first became possible to bring to light record of life and death in this country. Simon adds the significant note that "while the interests of the public health were frequently under discussion in Parliament, the growth of unofficial knowledge and sympathy in relation to the movement was shown by the rise of voluntary associations." Later, Sir John pays tribute to the work done, from the beginning of the 'seventies onwards, by the Charity Organisation Society, "strenuously endeavouring to educate the public towards a better economy of charitable resources." It is most intriguing, at the present juncture, to study the attempts made, in the third quarter of the last century, to substitute organised system for haphazard methods in dealing with the health of the community. We read in Simon's book of the determined fight made by Lord Shaftesbury, Chadwick, Southwood Smith and others to make the General Board of Health a success, and of the opposition of the "interests," and we are reminded that there was also "interest" which in those early 'fifties had raised its voice—that "of the millions of population still under the free ravages of infectious disease." Chadwick bore the brunt of the attack; he was declared to have been "impatient" but, as Simon says, "patience under sufferings of one's own, and patience toward the sufferings of others, are not equal measures of magnanimity." Chadwick had knowledge, at first hand, of the human miseries which were accruing

"day by day under the almost universal prevalence of sanitary neglect; and the indignation, which he was entitled to feel at the spectacle of so much needless suffering, is not ignoble excuse for such signs of over-eagerness as he may have shown."

Those two great friends of progress—the voluntary and official organisations—set to work with a will, and the results which have floated up, in the last century, would have surprised the pioneers. Dr. Farr's statement of 1857, that "the deaths of 17 persons per 1000 may be considered, in our present imperfect state, natural deaths," but that "this standard

* An address delivered on Feb. 13th at a meeting of the Charity Organisation Society.

cannot be applied to the large towns, which can never become so healthy as the country," is an interesting one, in view of the fact that the average death-rate in London, for the last seven years, has been 12·3. Even more remarkable is the reduction, since 1900, in infant mortality, which must, however, be regarded in the main as an outcome of the Education Act of 1870.

The successes gained obviously suggested that the humanitarian, sanitary or preventive idea, call it what you will, already so advantageously exploited in public health, must now be turned to use also in personal health, and plainly the attack had to be directed against the beginnings of disease. Hence, school medical work was undertaken nearly 20 years ago, maternity and child welfare work commenced a little later and has been in active operation since 1918, tuberculosis work began in 1911, and venereal disease clinics came into operation in 1916. The passing of the National Insurance Act and the establishment of the above-named public health services made it clear, as Lord Dawson told us at the time, that

> the line of demarcation, between State medicine in a locality and domiciliary medicine, as represented by general practitioners, was no longer that between preventive and curative medicine";

and he and others set to work to devise plans "under which institutional and organised provision should lead off directly from private practice." And now, with the Ministry of Health proposals, a further great opportunity presents itself, and voluntary hospital committees for some time past have been actively engaged in considering how they can give help in realising the new ideals.

The Voluntary Hospital as a Consultative Centre.

In a presidential address at Norwich on the Junction of the Voluntary Hospital in Relation to Public Health Services, Sir Arthur Stanley described how, "by giving of their best," the medical profession had

> altered the character of the voluntary hospitals, until from being merely dispensers of charity they have become the main centres of training and research . . . they have not set their helm by any fixed star, nor steered their course by any official chart," and "this was not so much of importance while the State in respect of its public health responsibilities was content to be driven by circumstances rather than guided by principles. It is obvious, however, that, when one of the factors in this situation underwent a change, the other could not fail to be affected." He adds: "It will be appreciated at once that all the essential elements which are constituent parts of a complete public health service on behalf of the sick, are in greater or less degree in existence; they do not call for creation, they call for adjustment, correlation, and development. This is obviously the object for which we should all strive, and in the attainment of this it is obvious that the voluntary hospitals can and must play an important part."

Sir Arthur Stanley then refers to the questions upon which the Minister of Health asked, a year ago, for suggestions. He points out that complete uniformity of practice may not be attainable, but he thinks it desirable to consider to what extent it might be wise to formulate general principles for guidance. A principle which must, he says, be kept in view is that of "establishing the voluntary hospitals in the position which they have as yet only partially attained namely, that of consultative centres." The Minister raised the question of the possibility of allocating categories of cases to one or other type of hospital. As things stand, some types are already absent, even from the largest voluntary hospitals—e.g., maternity cases, infectious fevers, mental cases, and other specialised types; and reasonable discrimination might clearly continue to be exercised, without any prejudice to teaching functions. The all-important point is, that sight must not be lost of the great advantages to all concerned to be gained from the careful framing, by local consultative committees on which the representatives of the voluntary hospitals and the public authorities would confer together, of schemes for giving effect to the eminently practical objects adumbrated in the Minister's letter.

Two examples may be cited of things already accomplished by coördinated effort on the part of health workers. The London mortality from measles up to the fifth year of age per 1000 born has in the last five years, as compared with the preceding quinquennium, declined more than 25 per cent.; this notable result is clearly ascribable to coöperation between the Ministry, the Metropolitan Asylums Board, the county, city, and borough councils, and medical practitioners. Again, having regard to the advanced state of evolution of the voluntary hospitals and the social services already rendered by them through their almoners' departments, it was recognised at the outset that the London school medical service must be developed on similar lines. It was therefore devised to work as a hospital and general practitioners' service, coördinating the activities of doctors and social workers, and linking them up with the general education service of the Council, and not as a newly constituted ad hoc municipal service. An important outcome of this decision has been that the wishes of the hospitals, as expressed by Sir William Collins,[1] were substantially met; moreover, general practitioners have, during the last 18 or 20 years, had the opportunity of becoming keenly interested in school medical work. It is confidently hoped, therefore, that the precedents thus established may help in securing, in further developments, that coöperation between unofficial and official activities which is so much to be desired.

All those who have studied the question of medical out-relief have been impressed with difficulties arising from application of differing methods of practice in similar and closely adjoining areas. The problem has in the past been mainly concerned with curative treatment; it now becomes more complex, for not only those who are, or believe themselves to be, seriously ill, are in question; there is the clamant need of endeavouring to withstand the beginnings of disease. Dr. Gee used to say that "in medicine the first thing is diagnosis, and the second thing is diagnosis, and the third thing is diagnosis." Appreciation of the truth of this led the guardians in North Lambeth many years ago to place the entire poor-law medical service, institutional and out-relief, under unified control. It is not only the patients claiming hospital treatment who make up the sum total of those for whom such treatment may be deemed desirable. McVail[2] gave a number of typical instances of "cases which ought to be removed" and "cases which ought not to be removed." Already, in 1909, he had noted that—

> "in the cities persons were being attracted to institutions who were able to maintain themselves." He added, "repression of those who do not need and so do not deserve . . . will be even a more difficult duty than attraction of the needy and deserving who at present refuse to come in."

Now that the importance of exercising discrimination, as between hospital and home treatment, is seen to be of more vital moment than ever before (from the point of view of the community as well as of the patient), the experience gained in Lambeth is especially important.

The results already achieved by the educated mother who has been through the schools, when compared with those aforetime attained by the illiterate mother, of the out-patient rooms of half a century ago, represent a net gain of 60 per cent.—i.e., a reduction of infant mortality from about 165 per 1000 born to about 65 per 1000 born. Thought and care, such as have been devoted in the last 30 or 40 years to promoting the welfare, first of school-children and then later of infants, should now be further directed to the provision of carefully coördinated medical help, for all ages and both sexes, on preventive and curative lines. Such an

[1] Hospitals and the State, a paper read in 1912 at Birmingham, at the Third Annual Conference of the British Hospitals Association.

[2] Appendix XIV., Report of Royal Commission, 1909, pp. 113–116 and 156.

enterprise must be a coördinated undertaking of all available voluntary and official organisations in each locality; there is work and enough for all; competition, therefore, between voluntary and official institutions can, and should, be avoided. Each voluntary hospital in London, as consultative and teaching centre, should form a nucleus functioning in close coöperation with associated health agencies. In the living organism formed by aggregation of such units there must be no schism of foot against hand, or of ear against eye, "each member should have the same care, one for another." Governed not so much by binding covenants as by the inspiration of a common purpose, such an organisation would speedily bring about a fall in death and sickness rates, and a rise in efficiency and working capacity that would open the eyes of the statisticians.

TREATMENT OF BURNS BY TANNIC ACID.

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Burns are most worrying and unsatisfactory lesions, both in hospital and in private practice. The extreme prostration associated with the initial stage, the developing toxæmia, the local condition, and the end-result, all in turn give cause for serious thought and consideration. The mortality-rate is still very high. Woodward and Drummond [1] find a rate of 54 per cent. for burns and a rate of 25 per cent. for scalds. Fraser [2] groups them together at 38·7 per cent. in children of 10 years and under. Improved technique and progress in medicine have helped to reduce this figure, but it is still very alarming.

Avoidance of Toxæmia.

The treatment for primary shock is fairly uniform. The uses of the electric cage, transfusions, and infusions, and drug treatment have been well discussed in modern text-books. It is in the treatment of the local condition that methods vary considerably. If a sound and simple means of preventing the toxæmia which follows the burn could be found a great step in the right direction would have been taken and a happier outlook could be entertained. About 60 per cent. of the deaths occur, it is stated, from shock within the first 48 hours. Toxæmia should be included as an early factor, for it is known to be active within this time. Robertson and Boyd [3] found it within eight hours in their experiments on animals.

There is one method which efficiently combats the onset of toxæmia, but which is little used in this country. That is the use of tannic acid, first advocated by Davidson,[4] of the Henry Ford Hospital, Chicago, in 1925. Aqueous solutions, in a strength of about 2 per cent., applied to a burned surface for 24–48 hours produce a coagulum containing the degenerated and broken-down tissues. The surface is actually tanned. As the absorption of the toxins is prevented by precipitation the toxæmia does not develop. That the constitutional reaction following the burn is due to the absorption of toxins is generally admitted. Many interesting observations have been made to support this conclusion. Pfeiffer [5] isolated the products of protein decomposition in burns and grouped them as neurotoxic and necrotoxic. Post-mortem appearances in burns were found to be comparable with the changes seen in other cases where a high degree of infection had been present, as in septicæmia. Markusfeld and Steinheus [6] showed that, if the blood-supply to the burned area was cut off, the usual constitutional reaction did not take place. Vogt,[8] by performing parabiosis between two animals and burning one, found that both were equally affected, though not so severely as under ordinary circumstances. If they were separated within 12 hours the unburned animal exhibited only a slight degree of toxæmia. Vogt, Robertson, and Boyd, and oth found that the toxæmia was only of a mild degre the injured tissues were removed soon after accident and the wound treated aseptically. T radical treatment of burns would be to remove the affected tissues, as their presence is the cause the toxæmia. In débridement the whole burn a is excised and a clean raw surface left behind. I a sound procedure, but has its disadvantages. thoroughly carried out it means a long anæsthetic a critical time, the discarding of islands of epithe tissue, and great risk of subsequent infection, besi a painful after-treatment and the necessity for sk grafting. In severe cases débridement could not attempted in the first instance, but tempor measures would have to be employed until patient's condition justified the risk of an anæsthe Exsanguination transfusion as an adjunct has gi excellent results where delay has resulted in development of toxæmia.

Other methods aim at the control of the format and absorption of toxic products and the prevent of sepsis. Picric acid is still widely used in this coun It precipitates proteins to a certain extent and weak antiseptic properties. Thierry and other Fre surgeons first advocated its use as a dressing. T its precipitating properties are practically negligi is well illustrated by the results obtained with Paraffin preparations are also employed to a gr extent. Their usefulness is questionable if sepsi present, or if the area has not been thoroughly clean beforehand. Absolute alcohol and full exposure w the application of a drying powder have b employed with the object of drying up the surf and thus impeding the formation of the autol products and lessening the risk of sepsis. The tr ment is difficult to carry out satisfactorily.

Burns Successfully Treated with Tannic Acid.

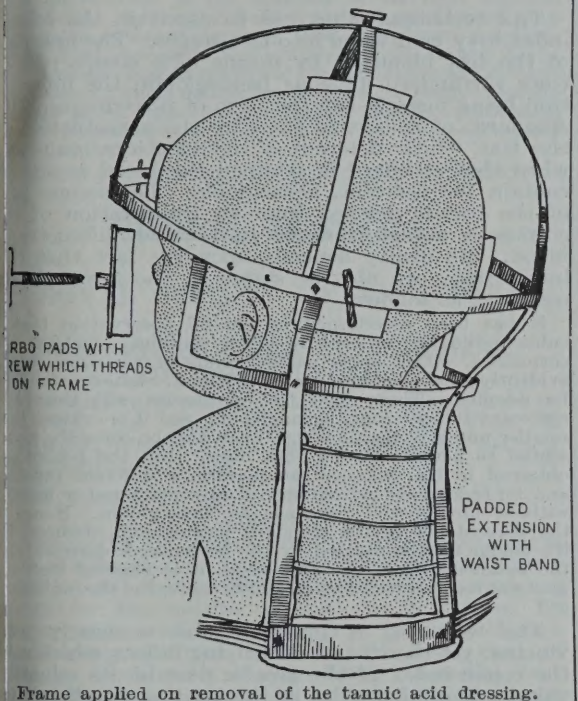
The use of tannic acid simplifies the treatment a great extent. The application is soothing quickly relieves pain. The coagulum forms a h protective covering for the tissues beneath and whole area is perfectly dry, so the loss of body fl is minimised. Scar formation is lessened, owing to absence of sepsis, and the wounds heal quic Above all the toxæmia is controlled, and m efficiently the earlier the tannic acid is appl Davidson's technique was as follows. The pat having been given a sedative, sterile gauze pads w bandaged over the burn and this dressing soake 2·5 per cent. aqueous solution of freshly prep tannic acid. Within 24 to 48 hours the tissues w stained a light brown colour. The dressing was t removed and the whole area exposed freely to the

The procedure in the following case of se scalding was somewhat modified, but serves as example of the effectiveness of tannic acid.

The patient, a girl aged 2, was admitted to the G Ormond-street Hospital under the care of Mr. G. E. Wa on the evening of Nov. 14th, 1926. She was suffering f severe shock. Vesication was present over the w scalp, over the brow, and down in front of both ears to neck. The whole of the neck posteriorly, the left shoul and the flexor surface of the left elbow-joint were simil affected. A dirty rag dipped in olive oil had served dressing. She had had bronchitis recently and there v still signs of it in the chest. As the scald was very d it was decided to clean it up before applying the tannic a The next morning her condition had improved somew and she was given a light anæsthetic of ether and oxy The skin was first cleansed with ether soap and the l tissues removed with a razor, the blade being held at r angles to the surface. It was then swabbed with abso alcohol and strips of gauze, dipped in the freshly prep 2 per cent. solution of tannic acid, were laid over the surf The whole was then bound loosely in gauze bandages the child taken back to the ward after ten minutes' a thetic. The dressing was kept moist by sprinkling frequently with the solution.

A cage was devised whereby a considerable amount of weight of the head and shoulders would be borne by a w band, the rest by pads over the scalp. With this the pro tive coagulum could be exposed, the head kept at rest, at the same time protected from trauma, as shown in

ustration. The cage was applied on the third day. By the venth day the coagulum was quite loose on the underlying rface. Pus was present at one point where a wound, as ll as the scald, had previously been noticed. The coagulum as all removed on the eighth day, exposing a clean healing rface beneath, the infected area being quite localised. A essing of ambrine with a thick covering of gauze was plied for 48 hours, the child resting on this "cushion" steriorly. The whole was then fomented for 24 hours. ter this it was treated with flavine and oil for a few days, d then this dressing was replaced by equal parts of sterile seline and ung. boracis. Thereafter the wound healed



Frame applied on removal of the tannic acid dressing.

interruptedly. The pressure of the pads on the cage had sulted in a deeper destruction of the underlying tissues d interference with the local regeneration, but the areas volved were small and the disadvantage was adequately unterbalanced by the efficient protection given to the rest the scald. These areas healed quickly without sepsis when e cage was removed.

On the ninth day of the illness the child developed broncho-neumonia and recovery seemed unlikely for the three llowing days. The wound, however, remained clean, xcept the part where pus had previously been present. he had fully recovered by then from a mild toxæmia which id been present during the first day or two. After these w days of anxiety the chest cleared quickly and the child as up and running about the ward ten days later. There now a growth of fine fluffy hair over about two-thirds of e surface of the scalp.

There has been little written reference in this untry to the use of tannic acid in the treatment of urns, yet it is simple and efficient and deserves a ore generalised use. This child was so severely alded that any hope of recovery seemed remote. et, in spite of the presence of bronchitis and the ter development of broncho-pneumonia, she did cover, and tannic acid was probably the means of ving her life, by controlling the developing toxæmia fore it had advanced very far. She took fluids well id never vomited, which emphasised the fact that xæmia was at its minimum. The tannic acid ressing was soothing and the treatment easy to carry it. The loss of body fluids was minimised by the tringency of the tannic acid; the surface of the ound remained perfectly dry until the healing rocesess had loosened the coagulum. The removal of e coagulum at this stage seems advantageous, as it rmits free examination of the area and the exposure a moist granulating surface. The coagulum, when rmed, protects the tissues from trauma and exposure. gain the after-treatment is simplified because sepsis is absent. Sepsis did occur at one point, but this was due to a wound, down to bone, caused by the original accident. It is interesting to note that this sepsis remained quite localised, as the tannin shut it off from the surrounding tissues. The wound healed quickly and scar formation was much less than was expected.

I am indebted to Mr. Waugh for his permission to publish the case.

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Clinical and Laboratory Notes.

ON THE PROTEAN NATURE OF "INFLUENZA."

A REPORT OF A MILD EPIDEMIC AT SEA.

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THE interesting features of this epidemic were the varying symptomatology and the long latent period preceding the first case of typical influenza. Unfortunately no bacteriological investigation was possible, but it seems probable that someone, probably a member of the crew, had boarded the ship in London carrying an organism which produced epigastric pain and vomiting in Case 1; spasmodic cough in Cases 2, 3, and 4; bronchial catarrh in Case 5; acute tonsillitis in Case 7, and, after ten days' incubation, typical influenza in Case 8.

On August 7th, 1927, a liner left London with a crew of 100 and about half that complement of passengers, bound for South America. On the first night at sea one of the crew complained of acute epigastric pain with vomiting. He had had a sore-throat on the previous day. There was some catarrh of the pharynx, and the tonsils were swollen. The pulse-rate was 100 and the temperature 98·2° F. No abdominal signs were elicited. There was no headache and no myalgia, and the patient's condition improved on the following morning. He appeared to have recovered in two days' time (Case 1). Three men attended the ship's surgery during the following two days with spasmodic coughs (Cases 2, 3, and 4). Only one had a sore-throat. In the two subsequent days another two seamen reported sick. One had a mild bronchial catarrh (Case 5), the other slight pharyngitis with cough (Case 6).

During the following week occasional cases similar to the above, with a spasmodic dry cough as their most prominent feature, presented themselves at the rate of about one new case a day. No other illness was reported, and no man was off duty during this period. Eight days out from London an acute tonsillitis occurred in a man subject to such attacks (Case 7). It was not until the tenth day at sea that a case of typical influenza occurred among those on board. A quartermaster (Case 8) came to me looking thoroughly ill. He complained of severe frontal headache, pains in the neck, aching in the limbs, and sore-throat. His temperature was 102° F. and his pulse-rate 100. In three days he was well enough to return to duty, though the usual post-influenza lassitude remained for some days longer.

In the subsequent week two further cases of typical influenza occurred, one in an engineer and one in a scullion, occupations which would keep the two men quite out of contact with each other or with the quartermaster. In addition, several men from all departments attended for various degrees of cold in the head and cough. At the end of the week two cases occurred, one quite unlike any influenza I have seen, the other providing a link with the previous cases. The former was a man seized with spasmodic abdominal pain in bouts of half a minute's duration every five

to ten minutes. There was almost dysenteric diarrhœa and some collapse. The temperature was 98·4° F., the pulse-rate 110. The tongue was clean. The whole abdomen was at first so rigid as to suggest an abdominal emergency. There was tenderness in the right iliac fossa. In two days the man was well again, except for lassitude, which continued for several days. The second case was a boy of 19, who, after an initial rigor, collapsed one morning with diarrhœa and vomiting. This lasted a few hours only, and was followed by pain in the right side of the chest, with a small area of pleural friction. I saw him at this stage, when he looked thoroughly "toxic"; temperature, 100·1° F.; pulse-rate, 110; respirations, 20. No further signs developed except severe headaches on the second and third day. He informed me later that he had coughed up blood-stained sputum three times at the onset of his illness. He was in bed for five days, picked up again very slowly, and retained signs in the upper lobe of his right lung, which, together with his initial hæmoptysis, made me doubt the cause of his pleurisy. A month later, however, no added sounds could be detected in the lungs; slight impairment of percussion note alone remained. During the remaining week of the voyage acute catarrhal conditions of the upper respiratory tract were rife among the passengers, officers, and crew. Some were mere "colds" without fever. In some mild tonsillitis with a spasmodic feverish cold occurred. In two cases marked laryngitis was the chief feature. In several there was some huskiness. Sporadic cases of diarrhœa occurred here and there, but this is, of course, a common condition in ships traversing tropical waters.

The influenza cold ran its course through the ship, cases occurring at intervals during the 24 days of the outward voyage and during a subsequent fortnight in dock in Buenos Aires, and ended with one or two sore-throats, and one moderately severe laryngitis during the first few days of the homeward voyage. No one was affected twice, except a sailor with large ragged tonsils, who had two attacks of acute tonsillitis, with three weeks' interval between.

A CASE OF
SUBACUTE COMBINED SCLEROSIS OF THE CORD OF SUDDEN ONSET.

BY S. C. H. WORSELDINE, M.R.C.S. ENG.,
CAPTAIN, INDIAN MEDICAL SERVICE.

THE following case seems worthy of record:—

A native driver in a mule corps, aged 25, was admitted to the Indian Military Hospital, Maymyo, suffering from loss of use of both legs, due, in his opinion, to witchcraft in his village in the Northern Punjab. He stated that he had never been in hospital before, and denied venereal disease. Seven days previously he had noticed weakness in his legs after the day's work; this weakness had steadily progressed until on the seventh morning he had been unable to stand up. No history of any pain or peripheral sensations could be elicited, nor any history of trauma.

Condition on Examination.—Patient appears to be a muscular, fit man. There is complete inability to move either leg from the hip downwards. Both legs are very spastic, and considerable force is required to flex the knees. Knee-jerks equal but exaggerated. Ankle-clonus present on both sides. Plantar reflex: Marked extensor bilaterally. Both eyes react to light and accommodation. Pupils equal and normal size. No nystagmus.

Sensations.—Pain: diminished over both legs, and an area extending from the pubes to 2 inches above the umbilicus. An area of hyperæsthesia from this to the xiphisternum. Sensations of touch, deep pressure, heat and cold lost to legs and area below umbilicus. Diminished sensation on rectal examination. No abnormality in urine, heart, and lungs, optic discs or retinæ. Spleen not palpable. Wassermann reaction negative. Cerebro-spinal fluid: not under pressure, clear, with normal cell count.

Blood examination: Total red cells, 2,340,000 per c.mm.; hæmoglobin, 80 per cent.; colour-index, 1·7. Poikilocytosis and anisocytosis present. Normoblasts and megaloblasts present; no myelocytes seen; 5 per cent. eosinophilia.

Diagnosis and Progress.—A diagnosis of subacute combined degeneration of the cord was made, although megaloblasts are rarely seen except in pernicious anæmia.

Two days after admission retention of urine developed. Fæces passed voluntarily. After a week in hospital the spasticity increased and there was loss of sensation to pain over the areas where it was previously diminished. A painless effusion of fl appeared in the left knee-joint.

The case could not be followed up, as he w invalided to his home.

A NOTE ON THE
FALLACY OF THE COLOUR-INDEX.

BY B. DERHAM, M.D., M.CH. R.U.I.,
LATE MEDICAL OFFICER OF HEALTH FOR GARSTANG.

THE technique employed to ascertain the colo index may be divided into two stages. The first p of the test identifies by means of a comparison tints a standard aqueous hæmoglobin, the infor tion being furnished in the form of percentages. standard, of course, is fixed by the perpetuation the tint which determines the identification; a when that standard is attained the blood is said contain 100 per cent. hæmoglobin. The second p of the test is derived from an enumeration of corpuscles actually present in 1 cubic millimetre blood. Its utility depends upon the fact that t information can also be stated in the form of p centages, as follows.

It has been ascertained by careful observation tha cubic millimetre of healthy blood contains 5,000,000 corpuscles, within fairly narrow limits of variation, wh evidently must exist in a case of this kind, whatever stand be adopted. These 5,000,000 corpuscles will thus represent 100 per cent. hæmoglobin; and it is evident t smaller numbers than 5,000,000 can also be correctly re sented as percentages on that basis. But the percent obtained in this manner can perform a different funct and be treated as percentages of abstract number mer without any special reference to hæmoglobin. Hence the percentages of the standard hæmoglobin obtained the colour test be divided by the percentages derived fr the enumeration of the corpuscles, it is claimed that quotient represents the hæmoglobin content of the individ cell.

The reasoning is plausible and seemingly c vincing, yet there is an underlying fallacy which r the colour-index of the greater part of its scient value. The fallacy lies in the tacit assumption t in the course of the attenuation of the hæmoglo of a corpuscle in anæmia the weight and volume water introduced into the cell are precisely equal the weight and volume of the hæmoglobin remov from the cell. This criticism is established by fact that (taking an extreme case) the colour-ind of 0·5 is interpreted to mean that one-half of attenuated cell is normal hæmoglobin and the ot half water. Now since we begin the process attenuation with a normal hæmoglobin of colo index unity, and end with an attenuated hæmoglo of colour-index 0·5, and since no other factor t the addition of water intervenes, it is evid that the underlying assumption is that the wa exactly replaces the hæmoglobin in the constituti of the cell, weight for weight and volume for volume in other words, that the specific gravity of the wa is identical with that of the hæmoglobin which replaces in the cell.

This is the fundamental fallacy of the curr theory of the colour-index, because the specific gravi of normal hæmoglobin is much greater than that water. Therefore if we attentively follow the proce of attenuation we will perceive that, weight weight, the volume of water introduced into the c would be much greater than the volume of hæm globin withdrawn from the cell, with the necessa consequence that there would be a very great a constantly accelerating augmentation of the to volume of the attenuating hæmoglobin far in exc of what is attributed to it by the current procedu

An Illustration.

I will now select a concrete case to illustrate so of the consequences of the fallacy which I ha indicated.

To begin with, a definition of hæmoglobin is required. healthy blood corpuscle is an almost chemically pure colloi

ution in water of what may be appropriately termed olute hæmoglobin, with the addition of small quantities other proteids, fats, &c., which constitute the stroma of corpuscles. The composition is given as water, 56·5 ts; absolute hæmoglobin, 41·1 parts, and other proteids, , &c., 2·4 parts. The specific gravity is ascertained to 1088. For purposes of calculation, I suggest that this uld be called "standard aqueous hæmoglobin." Next h regard to the serum of the blood. The addition of the s, proteids, &c., of the blood to water raises the specific vity from unity to 1030, subject to slight variations. ost the sole agent in raising the specific gravity of the od above 1030 is the addition of standard aqueous moglobin. A mixture of equal parts of standard aqueous moglobin of specific gravity 1088 and serum of specific vity 1030 represents the composition of healthy blood ich possess a specific gravity of 1058 and contains 5,000,000 puscles in 1 cubic millimetre. Also we can easily calculate m the given data that the specific gravity of standard eous hæmoglobin diluted with half its volume of water lour-index 0·5) is 1043.

Now for the illustration. A sample of blood is said to contain 50 per cent. or its equivalent of standard aqueous hæmoglobin possessing a colour-index of 0·5. With the aid of the data quoted we calculate that the specific gravity of blood containing 50 per cent. standard aqueous hæmoglobin or its equivalent is 1043. But we have just seen that 1043 is also the specific gravity of standard aqueous hæmoglobin diluted with one-half its volume of water. Then evidently that sample of blood must consist entirely of attenuated aqueous hæmoglobin of colour-index 0·5; and there would be no serum whatever. In other words, 10,000,000 corpuscles would be required to accommodate the attenuated hæmoglobin postulated by the data. I have discussed an extreme case in order better to demonstrate the fallacy of the colour-index; but this fallacy is present throughout the whole range of values, although in a minor degree in the earlier stages.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

COMBINED SECTIONS OF NEUROLOGY AND OPHTHALMOLOGY.

AT a combined meeting of these Sections held on . 9th the chair was occupied by Prof. E. AMWELL, President of the Neurological Section, l a discussion on the

OCULAR COMPLICATIONS OF ENCEPHALITIS LETHARGICA

s opened by Dr. JAMES COLLIER, who said that the ue of a discussion in this difficult region lay chiefly the record of individual experiences. It was not ugh for the nature of cases to be proved by opsy, and, even so, when a gross lesion, such as a morrhage, occurred in a rapidly fatal case of hargic encephalitis it was likely that the true ure of the case might be missed. So far there l not been evolved any reliable clinical standard the disease; its manifestations were very varied. case well illustrating the difficulty was that of a n aged 56, who had had an attack of cerebral hilis. He was seized with vomiting and complete rexia lasting three weeks, during which time he s seen by six physicians, none of whom could find y nerve involvement. At the end of the fourth ek, when he was dying, the picture was typical of hargic encephalitis. Tumour of the brain with lopia and sleepiness coming on rapidly might, the absence of papillœdema and long-continued dache, simulate the disease under discussion, but frontal tumours did not cause the Parkinsonian drome. The latter might be simulated by lesions any nature in the upper part of the brain stem. ere generalised poliomyelitis might simulate ephalitis lethargica so exactly that they could y be differentiated by seeking for polymorpho-lear leucocytes in the cerebro-spinal fluid. Polio-elitis did not, however, seem to cause the Parkin-ian syndrome. The inflammatory lesions of the ease might involve any part of the nervous chanism subserving vision. In one typical case patient had had complete left homonymous mianopia when the coma had subsided, and it l remained four years. In another case the later ical stage had been dominated by the syndrome retrobulbar neuritis, and blindness had come on few hours, with loss of the light reflex. This had n replaced by a large central scotoma which had ished in six weeks; there had been no papill-ema. Dr. Collier had only seen one patient with ssive papillœdema, and in that case there had been retinal hæmorrhages. Two kinds of ocular alysis might be met in the disease: (1) That any of the peripheral oculo-motor nerve-trunks, ugh rarely more than one in a patient. It was suggested to be due to a heaping-up of lymphocytic inflammation at the peripheral origin of the affected nerve. Recovery from this always took place in encephalitis lethargica. (2) There might be a nuclear ophthalmoplegia—i.e., an irregular ophthalmoplegia, seldom complete, affecting both eyes and leaving the optic axes unparallel. The more severe degrees left a measure of permanent paralysis. He had not seen any paralysis of conjugate movement with the axes remaining parallel and no diplopia, probably because the disease spared the white matter to a considerable extent. Nystagmus was not a common accompaniment. Herpes had been reported with every known form of encephalitis, and occasionally it was met with in encephalitis lethargica. He had not seen it in that association, but he had met a number of cases with unilateral total internal ophthalmoplegia, probably caused by a herpetic lesion of the ciliary ganglion; no other signs of the disease, however, had been detected.

The Ophthalmologist's Point of View.

Mr. F. A. WILLIAMSON-NOBLE dealt with the subject from the ophthalmological standpoint. He spoke of Dr. Perdrau's recent work, and gave an account of the experimental work of Grüter, Levaditi, and Harvier. Among the eye lesions occurring as a sequel to encephalitis lethargica were jerky eye movements, lack of blinking, blepharoclonus, partial ptosis, unequal pupils, deficient accommodation, deficient convergence, nystagmoid jerkings, diplopia with squint, lid retraction, oculo-gyric crises, sluggish reaction to light, Argyll Robertson pupil, squint, flickering of lids on tapping globella, and the blinking sign. One of the commonest was loss of the power of convergence, occurring in the Parkinsonian syndrome, usually associated with slight inequality of pupils and poor reaction to light. Another common symptom was a twitching of the lids on voluntary closure of the eyes. At Queen-square Hospital there had been several cases with oculo-gyral crises, as described by Wimmer. They consisted of spasmodic attacks of conjugate deviation of the eyeballs, mostly vertical, or vertical and to the side, and were usually seen during fatigue. In some patients there was a strong emotional factor. These crises might endure only a few seconds or might last hours. One patient had had a strong suicidal tendency during the attack. Looked at generally, he thought optic disc changes could be regarded as a very rare complication in this disease, and he agreed with MacNalty that in diagnosing a condition of encephalitis lethargica the absence of optic neuritis was a valuable negative sign.

Dr. A. FEILING referred to the oculo-gyric crises which had, he believed, only been noted in this country during the last two years; the phenomenon illustrated the fact that the sequelæ of the disease varied with successive epidemics. None of the cases with oculo-gyric crises that he had seen were older than 30 years. There was a sudden forcible movement of the eyeballs upwards. It was not entirely tonic; in his cases the eyeballs had shown rapid

clonic movements. The attacks lasted any time up to half an hour; but one patient had reported an attack lasting eight hours. One of his cases had had a spasmodic movement of convergence of the eyes. In none had he been able to control the attacks. He agreed that papillœdema was very uncommon in acute encephalitis lethargica, in fact when that symptom was present he regarded it as a point against the diagnosis of the disease. A permanent paralysis of any of the external muscles of the eye was comparatively uncommon, but affections of intrinsic ocular muscles were common, chiefly a deficient contraction of the pupil on accommodation. He had seen only one case of Argyll Robertson pupil in encephalitis lethargica; nor had he observed nystagmus as a sequel. Blepharoclonus was a common accompaniment of the post-encephalitic stage of Parkinsonism.

Discussion.

Dr. J. R. PERDRAU spoke of the small proportion of cases of encephalitis lethargica in the epidemic of 1919–21 which were correctly diagnosed, judging by the material which had been sent to him for investigation. In many the condition had been found to be tuberculous meningitis, and in others syphilis. In some instances in which the picture presented by the cerebro-spinal fluid seemed to be consistent with encephalitis, it had turned out to be cerebral tumour or some such condition. The supposed relationship of the virus of herpes to encephalitis lethargica was very important. It had now been isolated in that disease about ten times. Flexner was the chief protagonist of those who said that the virus of herpes could not have anything to do with encephalitis lethargica. Dr. Perdrau dealt with his arguments in detail, expressing the view that none of them was sound enough to invalidate the conclusion which they attacked.

Mr. MONTAGUE HINE gave particulars of the case of a young man, aged 24, whom he had first seen three and a half years ago. Two months before that date he had contracted a sudden febrile illness, associated with a rise of temperature, giddiness, pains in the eyes, and headache. Influenza had been diagnosed. A week later, as a complaint was made that the eyes had gone wrong, the doctor had thought that it might be encephalitis. When the speaker saw the patient he had had hemianopia on the left side, complete in the lower quadrant, partial in the upper. There had been little change since, but memory was much weakened, though the man had resumed his work. No Parkinsonism had developed.

Dr. W. J. ADIE considered that the diagnosis of encephalitis lethargica was made far more often than was justified. If papillœdema was found in a doubtful case he regarded it as a point against the diagnosis of encephalitis. The symptoms which Mr. Williamson-Noble had mentioned in his paper did occur, but were not distinctive nor of diagnostic value. The Argyll Robertson pupil was very rare and by itself was much more likely to mean syphilis. But there was one sign in the eyes which was very important in the diagnosis of encephalitis—namely, the lack of convergence and absence of reaction when the eyes converged to look at a near object.

Dr. GORDON HOLMES expressed his agreement with Mr. Williamson-Noble. In the acute stage of encephalitis lethargica palsies might be very irregular, but in nearly all cases there was a predominance of disturbance in convergence, often associated with complete fixation of the pupil when attempting to converge for accommodation; accommodation also was mostly paralysed. It was important, from the point of view of diagnosis, to remember the rarity, in encephalitis lethargica, of isolated complete ocular palsies. He quoted a case in a girl who, in 1920, when there was much encephalitis in London, came with slight sixth nerve and partial third nerve palsy, and a dilated inactive pupil. Eight years later, however, she had been found to have none of the sequelæ of the disease, but a recurrence of the palsies, this time associated with a lesion of the ophthalmic division of the fi nerve. A common symptom at the present day v the reverse of the Argyll Robertson pupil, but he h seen the true Argyll Robertson pupil in people v were recovering from the disease. He agreed w those who said that most of the cases having pa œdema and congestion of the disc with swelling of veins proved not to be encephalitis. He had fou that if the patient suffering from oculo-gyric cr lay flat on the couch with the head hanging o the end the severity was greatly lessened; henc seemed likely to be a disturbance of the re mechanism.

Mr. M. S. MAYOU referred to two cases, man a wife, who had suffered from encephalitis lethar and in whom secondary optic atrophy had develo later. He believed optic neuritis had also b present.

Dr. WILFRED HARRIS said there had been a dist change in the type of the ocular palsies seen in rela to the various epidemics of encephalitis lethar prevalent in this country since 1918, when in numb of cases there had been a marked double third ne palsy. He had not seen that in association with acute stage of the disease for some years. He agr with Dr. Gordon Holmes that sometimes th patients showed a loss of the light reaction in pupil. It was not surprising it should be a seque the disease seeing that any partial lesion of the th nerve might be followed by the Argyll Robert pupil.

The CHAIRMAN said that in a disease wh presented so many phases it was of the utm importance to try to ascertain what manifestat could be regarded as diagnostically signific especially when the patient came in a chronic st One of the most important of these, in his experie was loss of the capacity to move the eyes upw Another sign which had been present in severa his cases of the disease was an oscillation of the balls. There was inability to move the eyes i particular direction—it might be to one side upwards—then the eyes oscillated in diffe directions for a second or two, and settled do It resembled the quivering movement seen a dislocation of the lens. It could not be calle nystagmus. It might be a very valuable sign in recognition of an early case of encephalitis lethar whose nature was otherwise obscure.

NORTH OF ENGLAND OBSTETRICAL AN GYNÆCOLOGICAL SOCIETY.

Exhibition of Cases and Specimens.

AT the annual meeting of this Society held Manchester on Jan. 27th Dr. H. LEITH MUR (Liverpool) was elected President for the ens year.

Dr. K. V. BAILEY showed a specimen of

Multiple Uterine Fibroids with Torsion of One Ped

The patient was aged 36 years. The menstrual his was normal. There was no menorrhagia or leucorrhœa, there was definite congestive dysmenorrhœa. The pa had been aware of a "lump" in the right iliac region du the last 12 months. This had occasioned no symptoms six months ago, when an attack of acute abdominal occurred at the close of a menstrual period. This pa off after a few hours, and there was no recurrence until a v before admission, when a similar attack occurred, bu greater intensity. During the few days prior to admis the patient had experienced some dysuria. There wer symptoms of pressure on the rectum. On examina a firm, hard, mobile mass, occupying the right iliac re could be palpated and its origin from the pelvis was t able. The cervix was smooth and conical, and the was connected and continuous with two irregularly rou hard, but mobile pelvic tumours, which appeared t situated in a position anterior to a somewhat bulky ut and roughly one on either side of it. A diagnosis of ovarian tumours, with torsion of the pedicle of one of t was made.

n opening the abdomen the uterus was found to be the of numerous fibroids. The two masses which had n palpated vaginally were two subperitoneal fibroids nging from the antero-lateral aspect of the uterus and sessing definite pedicles. Torsion of the pedicle of one hem had occurred. The uterus and its appendages were oved by subtotal hysterectomy.

he second subperitoneal fibroid, the size of a fœtal d, had undergone hyaline degeneration, and there was lence of calcification in its substance.

Dr. Bailey said that it was interesting to note the ence of menorrhagia, notwithstanding the numerous erstitial fibroids present. He had operated ently on three other cases of multiple uterine oids, in none of which had menorrhagia been a nptom.

Dr. J. W. BRIDE showed a specimen of fatty tumour the uterus.—The PRESIDENT said that, judging m the size of the fat globules seen in the micro-pical sections, it was clearly a case of fatty ltration.

Dr. S. B. HERD described a case of

Puerperal Ovarian Thrombophlebitis.

he patient was aged 30. Four previous confinements, normal except for œdema of legs during last three months he fourth pregnancy. During present pregnancy had ked œdema of ankles during the last two weeks. She delivered at home by fairly easy high forceps. She was nitted to hospital during the third day after delivery h a temperature of 100·4° F., pulse-rate 120. There was ht jaundice, she looked ill, and was anæmic. There was ema in both ankles. Lochia normal. Uterus tender well involuted and no swellings palpable. The urine tained no pus but there was a feeble growth of staphylo-ci. The temperature settled down next day, and the rus continued to involute. Blood culture negative. the eleventh day another rigor took place but there e still no localising symptoms. Patient was given serum quinine, ergot, and pituitrin. On the twelfth day there tenderness in the popliteal space and left calf, but no a was palpable. There was tenderness in the left fornix no swelling. The uterus was normal. On the following blood culture showed chained streptococci. On the rteenth day the abdomen was opened. The left ovarian a was found to be thrombosed, the thrombus extending ost, if not quite, up to the renal vein. Ligature and ision of the left ovarian vein was performed, and the ovary was removed. No other abnormality was found the abdomen. The patient was very shocked after the ration and died 15 hours later in spite of blood trans-ion. There were no further rigors.

The conclusions Dr. Herd drew from the case re (1) the importance of early diagnosis; (2) that nplete excision of the vein was preferable to ligature; d (3) laparotomy might be performed earlier in vious cases of pyæmia where the patient was idly becoming worse, in spite of active treatment.

Prof. MILES PHILLIPS (Sheffield) did not consider t laparotomy was justifiable in a serious case of erperal septicæmia, unless the diagnosis was tain.

Dr. K. V. BAILEY described a case of

Atresia of the Vaginal Vault causing Dystocia.

vaginal examination during labour no cervix external os could be felt. The vaginal vault was irely closed, and a band of scar tissue ran across middle of it. The vault bulged under tension either side, and there was considerable thickness tissue composing it. A healthy male child was livered by Cæsarean section and the uterus removed.

Mr. J. E. STACEY (Sheffield) described a similar se delivered by Cæsarean section.—Dr. F. H. CEY (Manchester) also described a similar case which rupture of the uterus occurred early in bour and hysterectomy was performed.—Prof. A. NALD (Manchester) attributed the presence of cessive scar tissue in the vagina following col-rrhaphy to the use of strong and harmful anti-otics. — Prof. FLETCHER SHAW (Manchester) ntioned recent cases of sloughing and stenosis the vagina following the use of methylated spirit as antiseptic.

WEST KENT MEDICO-CHIRURGICAL SOCIETY.

AT a meeting of this Society held at the Miller General Hospital on Feb. 10th, Dr. CHARLES THOMSON occupied the chair and Dr. R. TRAVERS SMITH gave an address on the

Origin and Diagnosis of Functional Cardiac Murmurs.

He insisted that the subject was important in that it was not rare to meet patients who had been condemned to invalidism because such murmurs had been mistaken for signs of serious organic disease; because special books on heart affections rarely discussed the precise mechanism of these murmurs; and because books on general medicine, whilst giving some clinical description of these murmurs, usually did so only under the heading of anæmia. He pointed out how easily it can be proved that many patients with functional murmurs have no anæmia, and vice versa. The commonest functional murmur, the pulmonary systolic, was due to diminution of tonicity, with consequent dilatation and impaired contractility of the conus arteriosus, the thinnest and weakest part of the outer boundary walls of the ventricles. Thus, at its systole, the larger and stronger portion of the right ventricle forced blood through the dilated conus, through the relatively narrow pulmonary ring, and into the larger lumen of the pulmonary artery. He submitted that this condition was sufficient to cause a murmur, and that dilatation, distortion, or displacement of the pulmonary artery by the enlarged conus was not essential. It was difficult to understand how a dilated conus could pull up the apex, and, at the same time, push up the pulmonary artery. Having discussed the variations of pulmonary functional murmurs with exertion, excitement, posture, and pressure, Dr. Travers Smith stated that expiration constantly accentuated them, and inspiration diminished them, especially when forced. The murmur would sometimes become audible only during prolonged forcible expiration. He attributed this "respiratory rule" to the fact that inspiration widens the pulmonary capillaries, diminishing the pressure in the pulmonary artery, so that the dilated conus has less pressure to overcome, therefore its contraction more nearly approaches in completeness to that of the rest of the right ventricle. During expiration this sequence is reversed. Apical and tricuspid systolic functional murmurs were attributed primarily to diminished muscular tonicity at the left and right auriculo-ventricular orifices respectively. It was suggested that the three murmurs hitherto mentioned might well be called "hypotonic murmurs," in that tonicity was the myocardial function most impaired. The vast majority of these murmurs disappeared when the general body tone was attended to appropriately, and, therefore, these murmurs were never, in the absence of other signs of heart failure, sufficient evidence on which to base a diagnosis of any serious cardiological condition—though the cause of the general debility might be serious. What was sometimes called an aortic functional murmur was usually pulmonary, transmitted to the aortic area and occasionally along the carotids; it then followed the "respiratory rule" at both these situations. If a separate aortic murmur existed and was due to a corresponding local dilatation of the left ventricle to that of the conus on the right, such an aortic murmur ought to increase with inspiration, which raised aortic pressure. Lastly, bruit de diable, subclavian, cardio-respiratory, and pleuro-pericardial sounds were dealt with. Having pointed out that every abnormal sound hitherto mentioned was systolic in time, Dr. Travers Smith said that on a few very rare occasions he had heard transient diastolic murmurs that he considered functional because they had only been heard in cases with loud pulmonary functional murmurs. He attributed them to the diastole of the right ventricle sucking blood back from the dilated conus as well as from the right ventricle, and the meeting of the two streams. On each occasion these diastolic murmurs were heard over the conus and were traceable downwards.

CHARITY ORGANISATION SOCIETY.

A SPECIAL meeting of the Council of this Society was held at Denison House on Feb. 13th to discuss the relationship of the

VOLUNTARY HOSPITALS AND THE PUBLIC AUTHORITIES.

Lord DAWSON, who occupied the chair, announced that the object of the meeting was to discuss how the hospital accommodation of London could be best directed and coördinated. The progress of medical science, he said, and the alteration in the social needs of the people called for a larger supply of hospital accommodation than was formerly necessary. This demand had been met largely by voluntary effort, reinforced in recent days by the utilisation of some of the poor-law hospitals. This use of the poor-law hospitals for the treatment of the same classes as used the voluntary hospitals had been made possible by the separation of their function of the care of the aged and infirm from that of the treatment of persons suffering from illness or injury. These municipal hospitals—he used this term advisedly, as it should properly replace the old name "poor-law"—had been started on the rates, and had gradually attracted to their staffs consultants and specialists. It must be remembered that their work would grow. When the Poor-law Reform Bill became law, the public authority in London would be responsible for over 100,000 beds. Were there then to be, he asked, two parallel and competing hospital systems, or was there to emerge a well-thought out system of coöperation? The big teaching hospitals of London were part and parcel of the national life, and their traditions were centuries old; on them depended the future supply of doctors and nurses and, very largely, research into new means and methods, and to them the profession looked for guidance. No wise statesman, therefore, would try to undermine their position, but would ensure their utmost use in any national scheme. They had become what they were chiefly by the flexibility of their administration, which encouraged initiative, and which contained none of the cramping routine which seemed inseparable from State-aided institutions. They were, in short, the embodiment of

The Voluntary Spirit.

This was the management of hospitals by bodies which did not owe their origin to any State or municipal government, though this government might lay down certain general conditions. The voluntary hospitals were gathered under the ægis of the King Edward's Hospital Fund, which secured a certain amount of coördination without interfering with their independence. When the public authority took over its 100,000 beds, were they to utilise the great experience of the voluntary hospitals in building up their system, and preserve their spirit, or were all hospitals to fall under a bureaucratic control, with its rigid restraint and costly expenditure? To administer the great teaching hospitals of London would mean the addition of 8*d*. in the £ to the rates. If the voluntary system was to be maintained, the voluntary hospitals must rise to the opportunity. They could not stay where they were; they must either recede from the position they occupied or shoulder wider responsibilities, leading the new movement in friendly coöperation with other bodies.

Sir WILLIAM HAMER then read the paper printed on p. 334 of this issue of THE LANCET.

Dr. GRAHAM LITTLE advocated the retention of the voluntary system unmarred. Its characteristics—independence and charity—had attracted the best men and women to its service for generations past. With the consequent development of medicine had come an increased demand for treatment, which was focused upon the voluntary hospitals. The poor-law infirmaries which had grown up alongside them, tended by reason of their constitution to a certa lack of individuality; their organisation was ster typed and inelastic. Supported by the public pur they tended to compete with the voluntary hospit in equipment, but not in personnel. Although th was ample accommodation for the population, so hospitals were full to overflowing, and the state affairs called for a redistribution rather than provis of fresh beds, which was one of the most expens items in hospital administration. The provision apparatus and special services was another cos item, and if specialist staffs were paid for at mar rates the figure would again be very high. T voluntary hospitals of London needed 11,000 m beds; the infirmaries had 20,000 to 30,000 b empty, according to season. Several factors accoun for the anomaly—the atmosphere of an institut where personal service was given freely was entir different from that of an institution run by sala officers under a Government department, wh individuality was lost. Patients were attracted to independent and ambitious staffs of the hospit Poor-law suffered from easily removable handica for instance, legal disqualification of pauperi and the rule that only patients from the dist could enter an infirmary. The inherent disadvant was, however, the prohibitive cost of providing c patient departments and special medical and surg services, and the unlikelihood that the same class officers would be secured by payment as worked the voluntary institutions. Dr. Little proposed establishment of an advisory council, to be t first in the metropolis and then, if successful, in provinces. This body would contain delegates fr the King Edward's Fund, the Ministry of Hea and the London County Council, and should succ in coördinating the service if it remained essenti voluntary. This scheme worked well in cert universities which received large sums of public mo without losing their independence.

A Scheme for Coördinate Action.

Dr. HUMPHREY NOCKOLDS sketched the four m facts which rendered the question acute. First was difficulty the voluntary hospitals had in find money; second, the increasing population, especi in areas where large numbers of new houses were be built; third, the progress of medical science, wh entailed an ever-increasing expenditure on methods; and fourth, the increasing desire of public for satisfactory hospitals. Commenting on th in order, he remarked that a change had taken p in the quality of the funds. Very little was hear the voluntary subscriber; money was energetic collected from patients, and various means such "golden ballots" had been resorted to; one hosp in South London had drawn on the rates and oth were subsidised. It was admitted that volunt hospitals were unable to cope with the demands m on them. The remedies suggested were as follo (1) The State should take over all hospitals; would mean the destruction of the voluntary syst and would be the worst possible course. (2) The l authorities might make grants; these would hav be so large that no Government would ever sanc them unless popular representation were given; voluntary subscribers would then fade away and S control be established. (3) The voluntary hospi should be linked up with and control the poor- institutions, and find the money for both. The of organisation between hospitals and their slowne procedure annulled any claim they might have t the organising authority for a unified hospital serv (4) The last proposal, which the speaker believe be the only really practical one, was that the l authorities should institute new general hospit making the present poor-law hospitals the basi their scheme and retaining the voluntary hospit This would allow each hospital to administer it while relying on a broad, combining central autho to decide the general medical policy. The unit w be large—a county, possibly—with suitable sub

ns. The poor-law hospitals would be removed irely from the immediate sphere of poor-law ief. The danger of bureaucracy was real, but not urmountable. The general medical hospitals must left free from red tape, but their requirements were ite different from those of an institution for chronic es, and if the nucleus of their staffs were appointed m the voluntary hospitals the evil should be averted. e poor-law hospitals were not unworthy to take part an organisation on these lines; they had already umed a large part of the burden of the voluntary spitals, in spite of many handicaps like lack of atment facilities, the fear of the ratepayers, and e almost complete apathy on medical matters of the or-law section of the Ministry of Health. It was the shion to decry these institutions and say that patients uld not go into them; the fact was that they had to er for the patients refused by the voluntary spitals. Dr. Little's figures about empty beds did apply to London, and patients, so far from being uctant, often asked to be sent to the infirmary. It s true that the poor-law hospitals were inadequately ffed, but this fault, with others, was being removed. Lewisham and Eltham, with their huge new popula- ns, the guardians had stepped into the breach, ich would otherwise have remained empty, against ch opposition and with no help from higher horities. A new voluntary hospital was being cted at Shooter's Hill, and would run without any nexion with the new poor-law provision; this s almost a public scandal. The example was an reme one, but showed the present state of hospital anisation.

Discussion.

Miss E. FULFORD, chairman of the Fulham rdians, strongly defended the poor-law system m the criticisms made by Dr. Graham Little. ere were no empty beds in Fulham Hospital. e atmosphere of free service was equal to that of voluntary hospitals, the legal disqualification had n removed in 1918, and guardians put their ients' needs before those of the ratepayers. reover, the central authority and the Ministry of alth were most helpful.

Mr. B. METIVIER, of the Edmonton guardians, posed the fallacy that a consultant was con- minated by being paid for hospital service.

Lord RIDDELL wondered whether subscribers would ntinue to support the voluntary hospitals when they v public institutions doing just as good work and ng as well run. Public bodies, however, lacked the rit of research, and a teaching hospital could not ceed on the cast-iron lines of a rate-supported anisation. To preserve the voluntary system ant preserving the voluntary subscriber, and many sons were opposed nowadays to the principle of ving the voluntary hospitals supported by a limited ss and would prefer an increase of, say, a penny on rates.

Mr. E. A. H. JAY, the propaganda secretary of King ward's Fund, agreed that people would only scribe to a thing which could not otherwise be ained. Endowments, which up to 1914 had been gely adequate, had now dropped in value to per cent. of the required revenue; 32 per cent. was d by public authorities, and the remainder had to got from subscribers. Voluntary hospitals, if they e to continue to fulfil a function that no other anisation fulfilled, should devote themselves to ating cases requiring their unique special equipment, training doctors and nurses, and to research. yments from the County Council might be very ch larger in the future than they were at present.

The CHAIRMAN closed the proceedings with an portation to remember that the voluntary hospitals e a vital part of the credit of the nation abroad, mirror of the national life, the loss of which could possibly be contemplated.

Reviews and Notices of Books.

A TEXT-BOOK OF INFECTIOUS DISEASES.

Being the third edition of *Goodall and Washbourn's Manual of Infectious Diseases*. Revised and in large part rewritten by E. W. GOODALL, O.B.E., M.D., B.S. Lond., lately Medical Superintendent and Lecturer on Infectious Diseases and Fever Hospital Administration at the North-Western Hospital of the Metropolitan Asylums Board. London: H. K. Lewis and Co., Ltd. 1928. Pp. 718. 30*s*.

DURING the nineteen years which have elapsed since the second edition of this manual was published a vast amount of work has been accomplished, more especially in the fields of bacteriology and immunology. The third edition has increased in size by 300 pages and has developed from a manual to a text-book. Dr. Goodall's long and intimate acquaintance with all the infectious diseases met with in this country makes this volume very acceptable to all who make a special study of such diseases, and at the same time renders it a very useful reference book for students and practitioners. The introductory chapter is specially written for D.P.H. students who wish to know "something about epidemiology." The ordinary student can afford to leave this chapter until he knows something about the diseases themselves. The next five chapters deal with fever, contagion and infection, disinfection, rashes simulating those of the specific fevers, and sore-throat, and form a necessary introduction to a closer study of the actual fevers, which are fully discussed in the rest of the book. These early chapters are clearly written. Diphtheria, a disease which—in spite of serum treatment—is still serious, is dealt with very thoroughly in a chapter of 70 pages. Dr. Goodall considers that "the Schick test is of no value in the diagnosis of diphtheria," a statement which will not be readily accepted by those who have had opportunities of studying its significance in this connexion, and who will rather agree with Dr. Rundle in Ker's Manual of Fevers, who says that "100 per cent. of diphtheria cases are Schick-positive at the beginning of the attack." Dr. Goodall does not approve of swabbing contacts, but recommends Schick-testing and active immunisation as the solution of the problem of prevention. The author's experience of intubation in laryngeal diphtheria makes interesting reading; no mention is made, however, of feeding by the mouth in such cases.

The chapter on scarlet fever runs to 60 pages and includes an account of the Dick test, the Schultz-Charlton reaction, and immunisation against the disease with streptococcal toxin. Dr. Goodall thinks that the results of immunisation are so far not encouraging. Concentrated scarlet fever antitoxin is recommended by the author in the treatment of this disease in doses of 10–50 c.cm., given intravenously if necessary, but he remarks that "the serum appears to have no effect on complications when once they have set in." Most observers will agree with this.

The chapter on influenza is interesting, dealing, as it does, with the pandemic of 1918–19. Encephalitis lethargica, anterior poliomyelitis, and cerebro-spinal fever are all carefully considered. In Dr. Goodall's opinion the prognosis of encephalitis lethargica should be extremely guarded, and he quotes the epidemics in Sheffield and Belfast to prove this. For anterior poliomyelitis the Thomas straight frame with headpiece is recommended at first, and later natural movements of the affected limbs. Dr. Goodall does not apparently advise electrical treatment locally, and quotes Lovett, who says "that, after many years experience of it, he has never been able to satisfy himself that it was of any value." Many observers will agree with this. In the sequel there is a very clear and useful description of the cerebro-spinal fluid in all these diseases. Dr. Goodall considers that the temperature of the measles ward

should be 60° F., and that the patient should be protected from draughts with screens. This is scarcely necessary, and, as long as a measles patient is warm in bed, the freest possible ventilation is undoubtedly best, as recommended by Foord Caiger, and especially by Ker. Recent work on the prophylaxis of measles is discussed by the author in all its aspects. The chapters on small-pox, chicken-pox, typhus, and enteric fever are excellent and well worth reading from beginning to end. The chapters on glanders and anthrax are still retained. There are throughout excellent plates, photographs, diagrams, temperature charts, and tables which the student, in particular, will find extremely useful, while the appendices contain interesting matter. The reader will thank the author for dotting the book so plentifully with references.

Both author and publisher are to be congratulated on the third edition of this volume which is thoroughly up to date and should make a valuable addition to the library of every medical practitioner.

MALARIAL TREATMENT IN SYPHILIS.

Die Malariatherapie der Syphilis. By Dr. JOSEF MATUSCHKA and Dr. RUDOLF ROSNER. With an Introduction by Prof. ERNEST FINGER. Vienna: Julius Springer. 1927. Pp. 84. M.4.80.

THIS is the first account we have seen of the application of malarial treatment to syphilis in general. It records observations extending over four years and embracing 500 cases, in only 135 of which the nervous system was involved; and since the effects of malaria on the various forms of nervous syphilis are now widely known the main interest centres in the treatment of the other cases. The argument on which the authors base their wider application of malaria therapy is that as salvarsan and mercury are not direct spirochæticides their apparent action in the human body must depend on inducing a reaction of the human organism. It is this reaction and not the drugs themselves which destroy the infective agents; the action being apparently a mediate one, it seemed that the effect of any course of chemical treatment must depend on the state of the human body concerned and that various influences might increase or decrease the body's reaction.

Fever was already known as a powerful adjuvant, but experiment showed that alone it could not effect a cure, and might, in fact, hinder later treatment combined with intensive salvarsan courses it gave extremely good results. In early syphilis—that is, with infections of less than two years' standing—such combined treatment rendered the Wassermann reaction of the blood negative in 99 per cent. of cases and in all these cases the negative reaction was maintained; the cerebro-spinal fluid became negative in all cases in which before treatment it had been positive, but there were a few cases in which fluid previously negative to the Wassermann test became positive during the treatment. Serological relapses have hitherto been extremely rare, but clinical relapses, though still very few in number, have been a little more frequent. With infections of longer standing the results, while less brilliant, were yet better than those obtained by any other method of treatment, the Wassermann reaction of the blood becoming negative in 61 per cent. and that of the cerebro-spinal fluid in 55 per cent. of cases; no serological relapses have been observed in this group. In selected cases of pregnancy the treatment was well tolerated and gave excellent results. Congenital syphilis responded partially to the treatment, cases of early interstitial keratitis being aborted and those of the established condition being often greatly improved.

The authors of this brochure are convinced that in malaria therapy medicine has a powerful new weapon. Their technique, which is fully described, involves two inoculations of malaria, and they find that the incubation period is on the average five days. During the attack of malaria the Wassermann reaction, if not already positive, usually becomes so. The m important contra-indication to the treatment is card disease. Many individual cases are described various problems raised are discussed.

Altogether this is an interesting account o valuable piece of pioneering work.

Reports and Analytical Record

AUSTRALIAN WINES:
(1) MELVINA WHITE; (2) IMPERIUM RE
(SOUTHARD AND CO., LTD., 2, ST. DUNSTAN'S HILL, E.C

(1) Melvina White (Australian), when analysed, found to have the composition :—

Alcohol by volume	19·4 per c
,, weight (grammes per 100 c.cm.)	15·3 ,,
Total sugar	9·55 ,,
Sugar-free extractives—	
Total acid as tartaric	0·27 ,,
Mineral matter	0·31 ,,
Water	74·57 ,,

Preservatives were tested for with negative resu The wine is of a rich type and possesses an agree palate and aroma. These qualities in conjunct with its purity add to its value as a wine for t purposes.

(2) On analysis Imperium Red (Australian) g the following results :—

Alcohol by volume	19·3 per ce
,, weight (grammes per 100 c.cm.)	15·2 ,,
Total sugar	9·9 ,,
Sugar-free extractives—	
Total acid as tartaric	0·37 ,,
Mineral matter	0·38 ,,
Water	74·15 ,,

Preservatives, and colouring matter not natural a red wine, were tested for with negative results. mineral matter contains iron to the extent of 2·6 p per million of wine. The wine has a rich sweet fr flavour, and resembles a good port in appeara aroma, and palate. It is a pure and sound wine, the presence of organically combined iron may regarded as an asset. So high grade an Austra product merits the attention of medical men and ot who have to advise on matters of food and bevera

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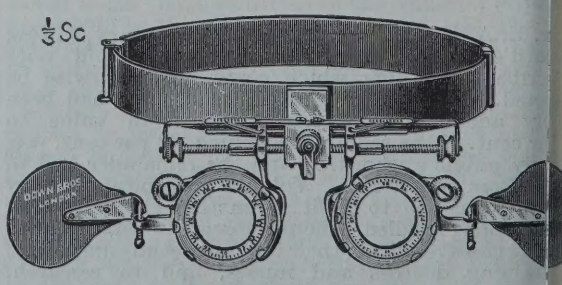
New Inventions.

A NEW FORM OF TRIAL FRAME.

IN estimating by retinoscopy the refraction o school-children the combination of the ordinary t frame and head band here illustrated has been fo



convenient. It can be readily fitted to the vary sizes and shapes of the head and once fitted rem firmly in position. I have given it a year's trial can confidently recommend its use.

The apparatus has been made for me by Mes Down Bros.

Reading. JOHN PARRY PRICE, M.D. Ox

THE LANCET.

LONDON: SATURDAY, FEBRUARY 18, 1928.

THE BICENTENARY OF JOHN HUNTER.

JOHN HUNTER is one of the great men whose fame as not only withstood the test of time, but has ncreased steadily as the developments of physiology and he progress of surgery have proved his work prophetic nd fruitful beyond anticipation. Sir HOLBURT VARING, in the Hunterian Oration delivered before ie Royal College of Surgeons of England on Tuesday st, reviews briefly the progress of surgery during the st 160 years, taking 1768 as approximately the date hen HUNTER'S boundless imagination and inventive- ess, spurred on by an insatiable curiosity, began to ave the practical shape which led to the revolution of ir science. "HUNTER fully recognised," said the unterian Orator, "that a minute and thoroughly omprehensive knowledge of the pathological processes curring in inflammation and growth is the real asis of a considerable amount of practical surgery." his may seem to be a colourless way of describing UNTER'S essential message to us, but it is an exact ay, and none the less forcible because it is short and adorned. The conception thus briefly outlined as absolutely new to HUNTER'S generation; its plications were not perceived until HUNTER'S aching was the scientific creed of all surgery; and s developments, which became immense with the portunities afforded by LISTER'S discoveries, are ill unrolling themselves before us.

In the Vicary Lecture Dr. G. C. PEACHEY, while entifying the homes of WILLIAM and JOHN HUNTER London, has added much interesting and agreeable mment, helping us to visualise the intensive industry the famous brothers. We learn once again how uch the immortal work of the younger owed in its ception to the brains of the elder, as well as to his irit of sacrifice; and we get a good idea of the vironment of the scientific student in the eighteenth ntury. WILLIAM HUNTER derived almost nothing om academic instruction, and JOHN was practically lf-taught, save where he obtained information rough contact with his brother, from a few colleagues, d doubtless through his labours in instructing pupils. ience in those days had no endowments at all in gland, and the benefits which JOHN HUNTER nferred upon mankind were created by his own ellect, working in a world where nothing but search counted for him. Nor were any easy aids to cial advancement given in the reigns of the Georges to entific workers, as they were bestowed freely upon litical partizans; the modesty of the social circle which JOHN HUNTER moved while he was pouring t treasures of brain—and all the money he could rn—in behalf of his fellows, is indicated clearly in e Vicary Lecture, and emphasised in a series of ters to his parents from Prof. WILLIAM HAMILTON, e pupil of both brothers. These we have been able reproduce through the kindness of his descendant, . LOUISA HAMILTON, and they form a remarkable dition to our knowledge of the workaday life of the dical student a century and a half ago. The series ses with one from a London physician to Prof. LLIAM HAMILTON'S father, THOMAS, who was ling the chair in anatomy at the University of Glasgow, to which the son succeeded. In this a vivid picture is given of the great master actually at work, a pathetic picture when we recall his physical frailty at the time; and how real that frailty was we can gather from Dr. J. A. RYLE'S communication on another page. Dr. IRVINE'S letter displays JOHN HUNTER immersed in his marvellous investigations, and it is timely, indeed, that the document should attain publicity on his two-hundreth birthday.

IODINE IN THE PROPHYLAXIS OF GOITRE.

INVESTIGATION into the causation of endemic goitre, still so prevalent in many parts of the world, was quickened by interchange of view at the recent International Goitre Conference held at Berne, and reported [1] for us by Prof. F. DE QUERVAIN, himself one of the foremost authorities on the subject. Clinical and museum specimens in abundance illustrated the vital importance of goitre in Switzerland. The Congress being preliminary, its time was largely occupied with the ætiology and epidemiology of endemic goitre, the most generally accepted view being that there is some toxic cause, its nature still unknown, the action of which can be prevented or counteracted by the ingestion of iodine, and that endemic goitre arises when there is a deficiency, absolute or relative, of iodine in the food and drink. The three introducers of the discussion—WAGNER JAUREGG (Vienna), MUGGIA (Sondrio), and SILBERSCHMIDT (Zurich)—as the result of experience in different districts, advocated the general preventive treatment of goitre by the use of iodised salt in the proportion of 5 mg. KI to each kilo of salt, the equivalent of gr. 1/26 to 1 lb. In the case of three varieties of iodised salt on sale in this country the strength varies from gr. 1/8–1/50 of NaI to 1 lb. of salt. Assuming that an average adult consumes about grs. 75 of table salt a day or 4 lb. in a year, it follows that if even the strongest of these salts is employed only gr. 1/2 of NaI would be consumed in 12 months. Such small amounts may be regarded as harmless; it is questionable if they are large enough to be efficient. In Austria, however, the use of iodised salt in the strength named above for three and a half years has been attended with a distinct diminution in the frequency of goitre during the school years. However this may be, it was agreed in general at the Berne Conference that in districts where goitre is endemic three measures are desirable: (1) the general use of a slightly iodised salt by the whole population in order to supply the physiological dose of iodine lacking in the food and drink; (2) goitres, when detected in the course of school inspections, require treatment with iodine under medical supervision; (3) care should be exercised to prevent the use of excessive doses of iodine in the treatment of adults. Swiss records have provided Dr. PERCY STOCKS, of the Galton Laboratory, with material for a valuable statistical survey[2] of the influence of iodine on the incidence of goitre and on the physical growth of school-girls. The worth of some previous surveys has been diminished, owing to difference of view as to what constitutes a goitre, but in this case the classification was that of the Swiss Goitre Commission, and the examinations were made almost entirely by the same medical officer. The routine treatment was to give one tablet a week of NaI 2 mg. (gr. 1/32), and the analysis clearly showed the efficiency of the treatment in reducing the size and incidence of the

[1] THE LANCET, 1927, ii., 1239.
[2] Annals of Eugenics, October, 1927.

goitres. Its effect was also observed on the growth of the girls between ages 11 and 16 who had goitre at the commencement of treatment. Information on this point was desirable, as it has been recognised by Swiss clinicians that in cases of endemic goitre there is a definite retardation of growth. Dr. STOCKS's analysis demonstrates an increase both in height and weight as a result of the iodine treatment, the more marked the goitre at the commencement of treatment the greater the increase in weight. It does not follow that iodine has a similar effect on the growth of normal girls in a non-goitrous district.

The prevalence of thyroid enlargement in English-speaking countries is still largely a matter of conjecture, although some exact surveys have been made. Dr. R. OLESEN based an estimate[3] of the frequency of goitre in Oregon and other North American States on the draft examinations of recruits. He has now gone on to the systematic examination of school-children. The observations,[4] which were all made by the same person so as to ensure uniformity, comprised the children in the schools of 32 towns in Oregon; 8181 boys were examined, of whom 1826, or 22·3 per cent., showed thyroid enlargement, while 3617, or 38·3 per cent., of 9427 girls were similarly affected. In Oregon, although there is less goitre in the sea-coast towns than in those situated further inland, thyroid enlargement is nevertheless fairly frequent near the sea. This distribution differs from that found in Massachusetts, where goitre is infrequent at Cape Cod and in the eastern part of the State near the sea, but is common in the western inland part. Examination of some of the water-supplies in Oregon shows a marked paucity of iodine; thus in the water supplied to Oregon City, in which the greatest frequency of endemic goitre among girls was found, only 0·06 parts of iodine per billion of water were found as compared with 2·50 parts in the water of New York City, and 105·80 in that of Stamford, California. There is no evidence to show that goitre in Oregon is in any way associated with pollution of the drinking-water, and the experience in that State indicates that a diminution of endemic goitre has followed the use of iodised table salt.

A survey of English school-boys and girls about the the age of 12, with the intention of ascertaining the frequency of enlargement of the thyroid gland in 1924, has also been made by Dr. STOCKS,[5] based upon results obtained by school medical officers for the Board of Education. Due allowance has here been made for the personal factor of the examiner, as some 600 medical officers were engaged in examining 375,022 children, their reference being to ascertain the number "in whom the thyroid is sufficiently enlarged for the increase in the size of the neck to be noticed on casual inspection without measurement or palpation." In order to secure uniformity in such surveys in the future Dr. STOCKS proposes that "enlargement of the gland shall be deemed to commence at a thyroid breadth of 42 mm. in boys and girls at ages 11–13," and as the normal gland increases very little between the age of 10 and 14, this standard may be applied to all children between their tenth and fourteenth birthdays. By the use of a simple gauge all thyroids below 42 mm. in breadth may be classed as normal, those above 42 mm. but below 55 mm. as moderately, and all above 55 mm. as markedly enlarged. As a result of this and other observations, the cautious opinion is expressed that "it would seem that prophylactic administration of iodine to girls in some endemic areas of England and Wales might be desirable." In a further paper by Dr. STOCKS, in association with Miss M. N. KARN a positive relation is found between thyroid enlargement in children and the mortality from Graves's disease in the large towns of England and Wales which leads them to infer that the factor which produces goitre is also one of the factors concerned in the causation of Graves's disease.

[3] THE LANCET, 1927, i., 350.
[4] Public Health Reports, Washington, Nov. 18th, 1927.
[5] Goitre in the English School Child, Quarterly Journal of Medicine, January, 1928, p. 223.

MEDICAL USES OF CARBON DIOXIDE.

THE many ways in which carbon dioxide is useful in medicine are now being belatedly discovered, but their application in practice lags behind and it may be worth while to review the facts as we know them. Its uses depend upon its action as a natural stimulant of the respiratory centre and first and foremost this action can be utilised with profit in administering anæsthetics. During induction many patients struggle and hold their breath, and it is found that by adding a small quantity of CO_2 to the inspired air, or by making the patient rebreathe what has been expired, the tension of the gas in the alveoli and blood can be so raised that long strong breaths are inevitable. Anæsthesia may thus be induced more rapidly if this is thought desirable. When the patient is unconscious respiration sometimes fails because abnormally deep breathing has reduced the tension of CO_2 in the blood, such failure occurring especially in connexion with intratracheal insufflation of ether and with gas-and-oxygen. Here again CO_2 offers a simple remedy, for it enables the anæsthetist to control the depth of respiration in accordance with the patient's changing state. Lastly, forced respiration of dilute CO_2 may be employed—provided that no objection arises because of wound or bandages—to wash the remains of the anæsthetic out of the system when the operation is over and bring the patient back to consciousness more rapidly.

All these seem to be legitimate uses of the gas, but they must not be adopted incautiously or without reference to the particular circumstances of each case. The claims put forward have perhaps been rather enthusiastic, and this leads Dr. R. M. WATERS, in a recent paper [7] based on six months' trial, to lay stress on the possible dangers of giving CO_2 to sick patients whose degree of acidosis is unknown. Quantities greater than those involved in graduated rebreathing should not, he says, be given to a patient unless the acid-base balance has been shown to be normal before anæsthesia was induced, and in support of this view he mentions that collapse and convulsions have occasionally followed its administration. Inhalations of CO_2 in concentrations of 15 per cent. or more cause a considerable rise of blood pressure and an increase of the coagulability of the blood, and Dr. WATERS considers that to change the amount inspired by sick people is to interfere with "fundamental physiology" and should not be lightly undertaken. His criticism, however, seems to be directed for the most part against the use of CO_2 in strong mixture. In a summary written from the more favourable point of view Dr. J. C. WHITE and Dr. L. M. HURXTHAL refer chiefly to dilutions of 5 per cent., and in this concentration regard it as valuable in many conditions in which the CO_2 tension in the alveolar air differs widely from the normal. In morphia or veronal poisoning, for example,

[6] Annals of Eugenics, October, 1927.
[7] Canad. Med. Assoc. Jour., 1927, xvii., 1510.
[8] Boston Med. and Surg. Jour., 1927, cxcvii., 1117.

he respiratory centre has become sluggish and needs rther stimulation although the tension is high; hilst in carbon monoxide poisoning the tension is w and 5 per cent. CO_2 is given to stimulate the ntre and promote greater oxygenation of the blood. fter respiration has been re-established by artificial eans this mixture should be given for 30 to 40 inutes, oxygen being used as a diluent because rboxyhæmoglobin dissociates more readily if the artial pressure of oxygen is raised.

In normal people inhalation of the gas is said to use no disagreeable sensation beyond a slight feeling f fullness in the head; the blood pressure and pulse-te are slightly raised. In cardio-renal disease with cidosis, however, the respiratory response to CO_2 is nsiderably increased and may be doubled, so that he greatest caution is required. In emphysema, on he other hand, there is little response even to air ntaining 11 per cent. of the gas. There seems to be misconception abroad that the cyanosis even of æsthesia, brain trauma, or morphia poisoning is ue to an increase of CO_2 in the blood. This is not so. ack of oxygen is the cause, and this can often be lieved by the hyperpnœa which small quantities CO_2 in the inspired air produce. The use the gas for eliminating poisonous substances n be extended to alcoholic intoxication—for alcohol, e ether, is eliminated by the lungs—and rapid covery from deep coma, with lessened after-effects, s been reported, though it should be noted that ildly intoxicated patients do not benefit to a propor-nate degree. In hiccup, which may be due to an normal stimulus reaching the respiratory centre a the phrenic nerve, CO_2 can be utilised to produce stronger and regular stimulus to displace the weaker e that causes the spasm.[9] Carbon dioxide may also employed (5 per cent. dilution in oxygen) to revive wly born infants; whilst depression of the respira-ry centre after cerebral operations, Cheyne-Stokes eathing, diminished coagulability of the blood, and llapse of the lung following thoracotomy are other nditions in which it has been of value. Whatever e object of its administration, caution is desirable to event the gas being given in cases of acidosis where e blood already contains an excess of it. Otherwise, wever, its use in low dilutions and with care seems be without danger, and may sometimes prove to be the greatest possible assistance.

RETIREMENT OF SIR FREDERICK WILLIS.

ON the last day of next month Sir Frederick Willis ll cease to preside over the Board of Lunacy Control, s place being taken by Mr. L. G. Brock, who has been pointed a Commissioner of the Board for this pur-se. Sir Frederick Willis succeeded Sir William rne as chairman seven years ago, after having been e of the principal assistant secretaries in the inistry of Health practically from its formation, and the permanent staff of the Local Government ard since 1890. He has, in fact, 42 years of public rvice behind him. His period of office at the Board Control has covered a time of great changes and fficulties, and the Board owes much to his wise idance. He was able in a high degree to hold the lance fair between the liberty of the subject and e need for efficient medical treatment and control, d his work was made the easier by the fact that was a grateful personality both to the local authori-s and to his medical colleagues on the Board. It y also be recalled that during the war he was in arge of the arrangements for the reception and re of Belgian refugees, and was honoured by the ng of the Belgians for this service.

[9] Vide THE LANCET, 1927, ii., 1144.

Annotations.

"Ne quid nimis."

PERIODICAL MEDICAL EXAMINATION.

THE value of regular medical examinations of the healthy has been urged with much eloquence recently on both sides of the Atlantic, and it has become a serious question for medical men and insurance officers whether or not the adoption of periodical examination in this country should receive their support. Dr. H. G. Turney, in his presidential address delivered at the Assurance Medical Society on Feb. 1st, took a definite stand against the proposal, on the ground that the question was tending to become the infiltrating edge of propaganda for impressing on the popular mind the urgent necessity for watchfulness on the part of any individual who hopes to retain his health. Dr. Turney felt that there was a real danger that these vociferous warnings might help to establish something approaching a system of terrorism among the weaker-kneed section of the community. While expressing the conviction that the scheme in the States is in the hands of capable and honourable men, he doubted whether its introduction into this country would be attended by the success which it had met in America. We have not over here the large Babbitt class who have made a fortune in strenuous business, and have retired while still in the prime of life. They have unlimited leisure with little outside interest, and the advertisement columns of the newspapers give evidence of a stupendous demand for every kind of solace for bodily trouble which results from their tedium vitæ. One might be tempted to infer that the majority of American people live on a combination of patent medicine and semi-digested foods, and it is evident that a scheme of periodical stock-taking at the expense of the insurance company would be extra-ordinarily attractive. The investigation made by the Metropolitan Company of New York into the working of the system showed that hygienic sins were being committed by 99 per cent. of those examined. "One in three," said Dr. Turney, "ate too much meat, another third took too little water, a still larger pro-portion too much tea and coffee, and, horrible to relate, nearly half the whole number committed other import-ant but unspecified errors in diet. . . .From a study of the literature one might almost be led to infer that a rigid observance of all these hygienic prescriptions would ensure complete immunity from all bodily ailments except those of old age, and even as regards these, that they would be deferred to such a remote epoch of time as to be hardly worth considering." Unfortunately every doctor knows that the people who enjoy the best health are often those who take no heed of what they eat or drink, and who make a practice of defying the laws of health; and we have, as Dr. Turney pointed out, reluctantly to admit that there are as many different standards of health which are beyond our control, as there are of intellect and morals. Some people seem to have poor health from birth or adolescence for no reason, and have to live on the dole of hope offered by some enthusiast who promises that if they will take brown bread or give up butter, all will be well. Unfortunately the effect soon wears off, and the sufferer starts on a new voyage of discovery for a cure-all. The singular thing is that this congenital incapacity to make that smooth adaptation to environment which constitutes health, has very little influence upon the expectation of life, or upon the incursion of organic disease. The introduc-tion of a free system of examination would pander to those morbid cravings, and so far from improving health would, in Dr. Turney's opinion, concentrate people's thoughts on their internal processes and tend to perpetuate what is morbid.

The second fallacy exposed by Dr. Turney is that a slight bodily disturbance, to which the best of us is subject from time to time, will, if neglected, lead to serious disease. Doctors are constantly being exhorted

to seek disease in its small beginnings, but while it is true that the great diseases must have their beginnings, it is also true that the world is full of human beings who do not feel absolutely well all the time, and who outnumber those who are incubating organic disease by a hundred to one. Every sensible man knows that nothing perpetuates these troubles more than constant inquiries and sympathy, for they are in the main of psychical origin. The worst thing a doctor can do for a patient is to suggest, either by word of mouth or by meticulous examination, that these things generally lead to serious diseases, or indeed to any recognisable diseases at all. It is not well that a man should look too closely into his plate, and the less he thinks about it the better he is likely to digest what food he eats. Dr. Turney would hold that within very wide limits it does not matter a bit what a man eats, provided he does not eat too much.

Dr. Turney illustrates his thesis by the quiet revolution which has been in progress in the incidence of dysmenorrhœa which is dropping to vanishing point. It has been found that this trouble prevails in direct proportion to the notice taken of it and to the multiplicity of precautions taken against it. This, he feels, carries a lesson of the importance of healthy thinking for healthy living, and by healthy thinking he does not mean thinking about health, but rather the reverse.

PROGNOSIS OF TUBERCULOUS PERITONITIS IN CHILDREN.

OPINION is still divided on the prognosis in tuberculous peritonitis, a subject which Dr. P. Nobécourt and Dr. Ilitch Dragolioub discuss in the *Revue de la Tuberculose* for last December. Physicians of a former generation, basing their opinion on a study of the caseous forms of the disease, considered that the outlook was usually unfavourable. Their successors, recognising the tuberculous nature of what had been known as essential ascites, took a less gloomy view, whilst more recently Armand-Delille has claimed 100 per cent. of cures in a series of selected cases treated by heliotherapy. In this country a general impression prevails that the prognosis in the caseous form is grave, whilst recovery may be expected in the ascitic type. Accurate statistics, however, are difficult to obtain. The child of poverty who is poorly nourished, and who complains of vague abdominal symptoms, usually finds his way sooner or later to the dispensary, where the tuberculosis officer observes the pale face, thin frame, and flaccid abdomen. The condition may be due to tuberculosis, but is more probably due to faulty diet and unsatisfactory home conditions. A diagnosis alone stands between the child and recovery. If the child is pronounced to be tuberculous the whole machinery of the public health department is set in motion on his behalf. The diagnosis is accordingly made, and wisdom is justified of her children; but the cause of scientific accuracy is not so well served.

During the six-year period, 1921–26, 25 children suffering from tuberculous peritonitis were cared for by the Children's Medical Clinic at Paris. No case in which the diagnosis was doubtful was included in the series and an attempt has been made to ascertain the after-history of each child. The result may be summarised as follows:—

1. Died in hospital, or shortly after discharge		7 (=28%)
2. After-history unknown:—		
Disease worse at time of discharge	1	7 (=28%)
Disease stationary at time of discharge	2	
Disease showing signs of improvement at time of discharge	4	
3. Patients whose after-history was ascertained:—		
Dead	1	11 (=44%)
Disease persisting	5	
Clinical recovery	5	

The cases thus show a mortality-rate of 32 per cent., but this is a minimal estimate, for it is improbable that all the untraced patients survived, whilst of the survivors several still showed signs of active disease at the end of the period under review. Five of the children, it is stated, were suffering from the caseous form and all of these died. Ascites was a prominent symptom in 14 cases, among which were five recoveries and one death, two patients being seriously ill, and three improving at the time the paper was written. This evidence suggests that peritonitis is not, as some have assumed, a relatively benign form of tuberculous infection. Its immediate results may be grave, and the possibility of relapse or obstruction due to adhesions make the future uncertain.

A brief account is given of the methods of treatment employed. During the feverish phase, often associated with the onset of symptoms, Dr. Nobécourt and Dr. Dragolioub recommend rest, the local application of hot or cold compresses, and painting the abdomen with glycerine, iodine, and guaiacol. When pyrexia has subsided heliotherapy, open-air treatment, and exposure to ultra-violet rays is advocated. Calcium phosphate or carbonate and tincture of iodine may be given internally. Under this treatment in favourable cases pyrexia declines, ascitic fluid and tumours are absorbed, while return of strength, improvement in appetite, and gain in weight herald the return of health.

TEACHING OF ANATOMY.

IMPORTANT changes are gradually being introduced in many medical schools in the teaching of anatomy, and an interesting discussion of this subject took place recently at the meeting of the Association of American Colleges.[1] In an account by Prof. J. C. Grant of the methods employed at the University of Manitoba emphasis is placed on the value of displaying persistently to the student the general principles which govern structure. As Prof. Grant rightly maintains, the necessary details can only be remembered when they are fully understood: for this purpose it is clear that the teacher must appeal constantly to function, phylogeny, embryology, and clinical experience to explain various morphological points. If the curriculum permits of a reasonable time being devoted to this mode of anatomical study, which demands systematic supervision and guidance of the student in his practical work rather than extensive lecture courses, he learns to correlate structure and function, and gains anatomical knowledge by personal observation and reasoning. The student is ultimately in a position to generalise from his own observations and to understand the meaning and significance of structure. This is a far more useful, inspiring, and stimulating education than the old interest-killing method of memorising innumerable facts with little or no reference to the factors influencing structure. In a second paper,[2] Prof. E. J. Carey makes a strong plea for the teaching of living anatomy, and shows how the medical student requires information about the form of the living, and not the morphology of the dead, which is practically the only knowledge presented by pure descriptive anatomy. To procure this, dissection, which is undoubtedly still a necessity, must be supplemented by every available method which will reveal the conditions during life, and the modifications in form which result from functional processes. From the responses to a questionaire sent out by Prof. Carey to the leading medical schools in Europe and America, it was found that as yet in only about 50 per cent. was there any serious attempt to study anatomy in the living subject, or to employ such means as the X ray and fluroscope screen to correct the erroneous impressions created by studies of the cadaver. British readers may be relieved to learn that the replies to the questionaire showed that British-trained anatomists, more than those of other countries, do appear to emphasise the anatomy of the living. There has been an appreciable forward movement in this country in recent years, and probably none of our anatomy departments now fails to make good use of the living model. Nevertheless, too few have yet employed other means which are available to make anatomy live, and to demonstrate

[1] Bulletin of the Association of American Medical Colleges, 1928, iii., 1.

[2] Ibid., 1928, iii., 10.

at form and function are most intimately related d cannot be divorced. The tradition of descriptive atomy remains as a considerable influence, and ere is to-day an urgent need to return to the spirit Hunter and Harvey. Anatomy has a history to be oud of, and the future is full of promise; as Prof. liot Smith stated in a recent Thomas Vicary lecture "the possibilities for great achievements in anatomy ere never so great as they are to-day; and the ed for men who will devote their whole time and ergies to the exploitation of these rich veins of e was never so urgent as it is now in England." any of the newer methods at our disposal for the aching of anatomy and morphological research quire special equipment, but the cost is not prohibitive. What is needed most seriously is an increasing mber of trained men with the wider vision, better d more efficient coöperation between the anatomist, ysiologist, and clinician, and a reasonable time in the edical curriculum for the study of the fundamental bjects.

ALIGNANT INTRACRANIAL ENDOTHELIOMATA.

STUDY of the gross and microscopical anatomy in cases of intracranial endotheliomata at the eurological Section of the Mayo Clinic has revealed e existence of a definite small group differing from e usual picture of benign encapsulated tumours. r. Winchell McK. Craig, of the Mayo Clinic, who ports in full on 11 illustrative cases, remarks [1] that ey all showed cellular activity with areas of mbryonic undifferentiated cells and mitotic figures. rresponding to the pathological picture was a inical history of a rapid increase in the severity of e symptoms. A review of Dr. Craig's cases indicates at in five instances the onset of symptoms occurred ss than six months before the tumour became ident, and the degree of cellular activity was found be correspondingly pronounced. In the other six ses there was a history of symptoms for from one three years, but on closer examination it was found at the severity of the symptoms had increased ortly before the patients' admission to the clinic. roders has shown that endotheliomata of low alignancy present a greater degree of differentiation d tend to form whorl-like masses of keratinised ithelium, whereas the more malignant types of the eoplasm do not tend to develop such whorls, the lls being undifferentiated and mitotic figures being attered throughout. From the surgical standpoint hese malignant tumours, if they have not invaded the rrounding structures, are comparable to malignant mours elsewhere, and if they are completely removed definite cure is effected. If, however, they have oken through their capsule and invaded the surounding tissues recurrence is likely.

THE OPTIMUM DIET IN DIABETES.

THE employment of insulin in the treatment of iabetes has led to remarkable changes in the diets ecommended for cases of the severer type. That areful dieting remains necessary in all cases is, of ourse, a platitude, but insulin can be used to secure he metabolism of extra food to such a degree that he total diet selected is to some extent merely ependent on how high a dose of insulin a physician ares to employ. We have been told that in some ountries it is the custom for wealthy diabetics of he less abstemious type to indulge in periodic anquets at which they endeavour to remedy their xcesses by extra large doses of insulin. As the esult of this possibility of employing insulin to ounteract the effects of food, two schools of thought ave become more or less established. The first ssumes that the optimum diet in diabetes is the west which will sustain the patient's weight and rength, with the blood-sugar always within normal mits and the minimum dose of insulin sufficient to chieve these conditions. The other school starts by working out what is considered to be a good generous diet, often chosen on the basis of 3000 calories for a man and 2500 for a woman, and proceeds to give insulin in doses large enough to keep the patient sugar-free under such conditions. The second of these alternatives is probably more popular with the patient, although it usually involves more care on the part of his medical attendant if hyperglycæmia is to be avoided. But a much more important consideration arises when it is asked which of the two methods is likely to be of greater permanent benefit. An endeavour to answer this question is found in the paper by J. M. Rabinowitch in the current number of the *Quarterly Journal of Medicine*.[1] Working in the department of metabolism of the Montreal General Hospital this observer has made close statistical inquiry into the histories before, during, and after treatment of cases selected from about 1200 attending the clinic. Many variables naturally arise in such an investigation; not only will the quality and quantity of the selected diet influence a case, but factors such as exercise, increased metabolism accompanying acidosis, the dosage of insulin, and the acuteness of the cases, have all carefully to be considered. Without entering into complicated details of the author's paper, it is worthy of record that the main conclusion arrived at is to the effect that if treatment is designed to promote continued good health for the maximum span of life in any patient, the diet chosen should not only be low in carbohydrates but in its total caloric content, whether the individual patient does or does not require insulin. The inquiries of Dr. Rabinowitch point strongly to the importance of encouraging abstemiousness amongst diabetics.

THE TREATMENT OF MAL-OCCLUDED TEETH.

OUR knowledge of the ætiology of mal-occlusion is very slight, and despite the extensive literature devoted to orthodontics, little has been said on the practical management of cases as they occur to dentists in private practice. Mr. A. T. Pitts, in the annual report of the Dental Hospital of London, 1926, deals with this gap in the dental student's education. He points out that many factors, which have no place in text-books, play their part in determining success or failure of treatment. The three criteria which he considers to justify orthodontic intervention are serious æsthetic defect, interference with the normal function of mastication, speech or respiration, and any inevitable predisposition to dental disease in later life. He maintains that the dentist should strongly urge treatment if the two last criteria exist, but must remember that a slight irregularity may actually be pleasing rather than the reverse, and that parents who press for treatment of very slight displacement in their children's teeth should be discouraged, unless the defect is likely to increase. An appliance should never be looked on as anything but a necessary evil. An important part of the treatment is the recognition of the various types of irregularity and their causes. Mr. Pitts follows Angle's classification as a useful one, but he points out that it must not be regarded as an index to treatment. In cases of inferior retrusion, in his opinion, the deciding factor is the appearance of the chin. If the chin recedes, then an attempt should be made to advance the mandible; if the chin is well-formed, then the maxilla only should be treated. He strongly contests the view that treatment should be postponed until the early 'teens, pointing out that it is now recognised that the orthodontist should attempt to stimulate bone growth at its most active period, and not confine himself to forcing teeth into new positions when bone growth is finished. He finds that children of 6 or 7 wear appliances without any fuss or interference with temper or well-being. At that age the deciduous molars are firmly implanted, and little absorption of the root has occurred, but if the dentist waits until the child is 10, expansion

[1] Surgery, Gynecology, and Obstetrics, December, 1927.

[1] Quart. Jour. Med., 1928, xxi., 211.

in the molar region will not be very successful, and it may even be necessary to wait until the pre-molars erupt. There is also a distinct advantage in expanding before the permanent laterals appear. Later treatment may well be successful, but it will have to be more elaborate and more prolonged. Although the majority of children do not resent orthodontic appliances, profound psychological difficulties may be provided by the parents. Mr. Pitts tells amusing tales of parents who interfered, more or less successfully, with treatment which was causing their child no trouble whatever. He recommends the dentist to take the parents into his confidence, to explain to them as fully as possible the why and the wherefore of the treatment in its various stages. Dealing with the vexed question of fixed or removable applances, he holds that the wise dentist will use either according to the particular case. On the difficult problem of anchorage, he says that it is wise in every case to over-estimate the resistance of the teeth to be removed, and to under-estimate the resistance of the teeth to be used for anchorage; it is far better to have an excessive anchorage than too little. Although it may be necessary to raise the bite deliberately as part of the treatment, this should be looked upon as an evil procedure likely to do harm in ordinary cases. Irretrievable damage has been done by capping a bite when this was not necessary, and Mr. Pitts's advice to those who meditate this orthodontic crime is "don't." He is a whole-hearted advocate of extraction, but with certain qualifications. He thinks that extraction should be regarded as an ancillary method of treatment, and usually combined with an appliance. A patient from whom a tooth has been extracted should always be watched carefully to be sure that the gap is properly filled in. Practical advice like this is invaluable to the dentist and of great importance to the medical man. If the family doctor does not hold sound views the dentist may not see the case until too late or may plead the necessity for treatment in vain. The general practitioner of both professions would profit by a study of Mr. Pitts's paper.

THE HEALTH OF THE ARMY IN 1926.

THE annual report of the health of the Army has just appeared and reveals a slightly higher invalid-rate, a lower number of constantly sick, and an identical death-rate with that of 1925. It was found that officers in India were less well protected by antityphoid inoculation than were the men, although there was an improvement on last year. Injury heads the list of causes of death among "other ranks," followed by pneumonia and diseases of the digestive system. There was a decrease in the number of deaths from both these natural causes. The principal cause of invaliding was middle-ear disease, which remains high and gives some cause for anxiety. Nearly a quarter of all the men invalided during 1926 suffered from ear trouble. The majority of men admitted to hospital were suffering from malaria, which was unusually severe in the Western Command in India. Influenza was very mild and only caused one death, but there were over a thousand more cases than in 1925. An interesting side-result of the coal strike was an increase in the amount of scabies, and the fact that each case lasted half a day longer than usual under treatment. This is attributed to the lack of hot water. Bermuda was the most healthy command and Malaya the worst. Venereal diseases diminished in frequency, but there is still a high incidence about the time of the Christmas furlough, when men expose themselves to infection without the preventive facilities that are available in barracks. It is hoped that a reduction in the incidence and an improvement in treatment may result from careful attention to these facts. The liability of uninoculated men to typhoid fever was seven or eight times greater than that of the inoculated, and the mortality ten times greater. We observed three years ago [1] that there was no discussion on the prevalence of tuberculosis in the reports of either of the three servic This year we note that "the whole subject pulmonary tuberculosis in the services is bei investigated by a special committee and the relati of this disease to service conditions, its inciden invaliding, and attributability will be the subject a report." We hope to deal with the figures of t report more fully in a later issue.

[1] THE LANCET, 1924, ii., 664.

PROTEIN TREATMENT OF DRUG-ADDICTION

ABOUT a year ago A. Lambert and F. Tilne described a new treatment of drug-addiction with preparation called narcosan, which consists of solution of lipoids, non-specific proteins, and wat soluble vitamins. The treatment is based on assumption that narcotics such as morphia cause to bodies to be formed in the body, and that these bod neutralise the narcotic and, in so doing, are themsel neutralised. When the narcotic is withdrawn th toxic bodies cause withdrawal symptoms because th are no longer being neutralised. Lambert and Tiln therefore proposed that when a narcotic is withdra narcosan should be given instead, in the hope th the lipoids which it contains will neutralise the to bodies, and thus prevent symptoms. The authors a recent paper [2] on drug-addiction consider that t results of narcosan treatment are not consistent wi the hypothesis on which it is based, and quote evide to show that drug-addiction is associated with hy function of the endocrine system, secondary possi to disturbance of the sympathetic. According to t hypothesis, withdrawal symptoms are due to a fu tional upheaval in the endocrine system. They st that the results of treatment with various endocri extracts and also by hypodermic injection of solutio of vegetable proteins, which are regarded as stimula of the endocrine system, confirm this hypothesis, a they point out that one of the vegetable prot substances (alfalfa protein) which they used as endocrine stimulant is also present in narcosan. is suggested that the beneficial effects of the lat preparation are due not to its ability to neutral toxic bodies formed in response to the narcotic, b rather to the stimulating effect of alfalfa protein the endocrine system. Acting on this assumption th treated a series of drug-addicts with alfalfa prot and obtained results similar in every way to tho obtained with narcosan. Withdrawal symptoms w slight and the patients remained in good physi condition. It seems probable, they say, that protei prepared from millet, rape, and hemp seed will gi equally satisfactory results, but recommend that forms of protein treatment should be reinforced synchronous administration of orchitic and ovari extracts, on the grounds that sexual function invariably affected in drug-addicts. An advantage alfalfa protein over narcosan is that it is very mu cheaper.

[1] Med. Jour. and Record, 1926, cxxiv., 764.

[2] The Proteal Treatment of Drug Addiction, by M. G. Cart T. J. Orbison, E. H. Steele, C. A. Wright, and E. H. William Med. Jour. and Record, Sept. 7th, 1927, pp. 282–284.

THE INCIDENCE OF GENERAL PARALYSIS

IN view of the reports from all sides which indica that mental disorder of every kind is on the increa in the United States, it is interesting to study t figures for syphilis and general paralysis recently issu by the United States Public Health Service to t Office International.[3] The incidence of syphilis amo the general population is, of course, uncertain, but t percentage of recruits giving a positive Wassermar reaction, out of a group of close on 12,000 in 1916 w 13, and out of 856 candidates for the Washingt police 15. The consensus of opinion puts the figure 10 per cent. for the whole population, but rece research has tended to lower it. The proportion general paralytics to others in mental hospitals seer

[3] Office International d'Hygiène Publique, Bulletin Mensu xix., 11.

gh. St. Elizabeth's Hospital in Washington admitted 58 general paralytics in a total of 26,500 entries tween 1886 and 1924, a percentage of 5·87. In 25–26 the percentage was 12·11. Census returns ve the admission figures over the whole country as 1 per cent. in 1910 and 7·9 per cent. in 1922, though e proportion of general paralytics to other patients tually in hospital in that year was 3·5 per cent. ne number discharged cured was 0·5 per cent.; ·5 per cent. were discharged improved, and 11·1 per nt. unimproved. Of every 100 dying in hospital ·5 were general paralytics and 14·54 were sufferers om cerebral syphilis. The returns of 29 State ental hospitals for 1925 showed a percentage of 3·1 admissions for syphilitic psychoses, the individual gures varying from 1·8 to 28·5 per cent. The gistration bureau shows the proportion of deaths from philis to have remained at about 8 per 100,000 of pulation between 1914 and 1924; deaths from neral paralysis were approximately 7 per 100,000 ring each year of the war, under six in 1919 and 1920, d about six and a half from 1921 to 1924. Treatment malaria seems to have yielded better results than ost workers in this country dare to claim, for the gures given for the total remissions vary between and 70 per cent. Although the census returns do not ow a decrease in the incidence of general paralysis any medical sources report a decline, and this, if tual, should make itself felt on the official returns ter about five years. The incidence figures for venile general paralysis are small. In 1910. out 60,769 admissions to U.S.A. mental hospitals, only 7 patients under 15 were diagnosed as general ralytics. P. C. Jeans and J. V. Cooke, who examined ne-fifth of all the infants born in St. Louis during a rtain period in 1921, put the incidence of congenital philis at 3 per cent., but out of the children of 96 families examined between 1910–21 P. J. White nd B. Veeder only saw two cases of general paralysis nd two of tabes dorsalis. In this country in 1925 ne number of patients resident in mental hospitals as 106,403, and the death roll was 8029. The number general paralytics admitted in that year was 1218, 1·14 per cent. of the residents; the number of those ho died was 1174, or 14·1 per cent. of the total deaths. ssuming a population of 45 million, the number of eaths from general paralysis is therefore about ·6 per 100,000, a figure considerably lower than the ·4 of the U.S.A. census for 1924, and the other gures are well below the corresponding ones furnished y the American census. The inference is that general aralysis, in common with most other mental and ervous conditions, has a higher incidence in the Jnited States than in this country, but the reasons for his are not as obvious as for the greater prevalence of sychogenic disorder.

Other figures, quoted by Dr. P. L. McKinlay in a aper on the relative incidence of general paralysis nd locomotor ataxia among different social classes,[4] ive the average death-rate from general paralysis as ·07 per 100,000 during the three-year period 1910–12, or which the American figure is only 6·3. Contrary to he usual belief, Dr. McKinlay finds that general aralysis is proportionately more frequent in the ower than in the upper occupational classes. This ight seem to dispose of the theory that this form of euro-syphilis is determined largely by excessive rain-work. It has long been suspected that some aw, and not mere chance, governs the form which ertiary syphilis shall take in a given patient, and it as Dr. McKinlay's object to discover, if possible, the ignificance of occupation and other social factors. Ie quotes the conclusion of Mott that stress on those arts of the nervous system that are most in use is an mportant element. In a majority of general para- ytics Mott found that the gross wasting of the left erebral hemisphere was greater than that of the right, nd out of 60 successive such cases of tabes dorsalis nly two were not engaged in occupations involving tress of the lower limbs. The fact that his statistics prove the opposite of the popular view may, he thinks, be due to error in the premises on which that view is based. Statistics derived from general hospitals on the social incidence of disease are apt to be vitiated by the selective methods employed. Perhaps the most telling argument, however, against the general impression is that it leaves out of account a host of factors like alcohol, which according to Mott, favours the onset of general paralysis while it merely accelerates tabes, and the higher incidence of syphilis among the lower strata of the population. Only when statistics are modified by this factor will they have any real value.

[4] Jour. of Hyg., 1928, xxvii., 174.

TANNIC ACID IN THE TREATMENT OF BURNS.

THE suffering caused by extensive burns is so intense and the danger to life is so grave that medical men cannot rest satisfied with the means at their disposal for treating the victims. We publish on p. 336 an article by Dr. R. M. Gordon on the use of tannic acid, which in his experience efficiently combats toxæmia by preventing the absorption of toxic products, as well as soothing pain and lessening scar formation. In a recent issue of the *Canadian Medical Association Journal* (1927, xxii., 1357) Dr. John Hunter records the case of a girl who was severely burned on the face, neck, and arms as the result of a gasoline explosion. The fire brigade applied a first-aid dressing of picric acid and a young doctor removed this and substituted carron oil. Next morning Dr. Hunter found that the carron oil dressing was causing intense pain and profuse discharge. He therefore sprayed on a watery solution of 2½ per cent. tannic acid, leaving a coating a quarter of an inch thick. No bandage was used and the acid was left to peel off, which it did in about three weeks' time. Relief was instantaneous and the discharge was lessened. Although pus oozed out from under the dressing there were no toxic effects. Shock was minimised by heat, stimulants, rest, and diathermy, and as soon as possible the affected areas were exposed to sunlight. The result was eminently satisfactory, and Dr. Hunter concludes that tannic acid is the treatment of election for burns.

THE MOTT MEMORIAL.

THE response made to an appeal by the Council of the Royal Medico-Psychological Association to the colleagues, friends, admirers, and former pupils of the late Sir Frederick Mott, for their coöperation in the publication of a Memorial Book has been such as to encourage the Council to proceed with the proposal. The Council has appointed a Memorial Committee consisting of Dr. C. Hubert Bond, Dr. F. L. Golla, Dr. Douglas McRae, Dr. Thomas Beaton, and Lieut.-Colonel J. R. Lord (hon. secretary). Neurologists, psychiatrists, and pathologists in Canada, the United States, and Japan, as well as in this country and on the continent of Europe, have promised to contribute papers to the Memorial Book, which promises to be of high intrinsic scientific value and should worthily perpetuate the memory of one who did so much to elucidate the dark corners of neuropathology. The Committee have opened a fund which will be devoted primarily to the publication of the Memorial Book. Donations should be sent to the Treasurer, Dr. James Chambers, The Priory, Roehampton, London, S.W. 15. A donation of not less than 18*s.* 6*d.*, if subscribed before publication, will entitle the donor to a free copy of the work when it appears.

ROYAL COLLEGE OF PHYSICIANS OF LONDON: CONFERMENT OF HONORARY FELLOWSHIPS.

THE Royal College of Physicians is celebrating on May 14th next and following days the tercentenary of the publication of William Harvey's book "De Motu Cordis," an event that laid the foundation-stone of modern physiology and scientific medicine. Delegates and distinguished guests from all parts of the world have been invited to participate in an interesting

programme of scientific and social gatherings. The College is reviving on this occasion an honour that has been bestowed but seldom in the four centuries of its existence, by electing to its honorary Fellowship the Earl of Balfour, Sir Ernest Rutherford, and Profs. Ivan Pyotrovitch Pavloff and Karl Friedrich Wenckebach, each of whom has rendered signal service directly or indirectly to the advancement of medical science.

The Royal College of Physicians of London has issued a card of lectures to be delivered at the College in the coming spring. On March 1st, 6th, and 8th Dr. F. A. E. Crew will deliver the Milroy Lectures on Individual, Familial, and Racial Inborn Differences in respect of Immunities and Disease Resistance. On March 13th, 15th, and 20th, Dr. T. Izod Bennett will deliver the Goulstonian Lectures on Some Problems of Nephritis. On March 22nd, 27th, and 29th Dr. James S. Collier will deliver the Lumleian Lectures on Epilepsy. On May 1st and 3rd Dr. E. P. Poulton will deliver the Oliver-Sharpey Lectures entitled an Experimental Study of Certain Visceral Sensations. On June 5th, 7th, and 12th Dr. Charles Bolton will deliver the Croonian Lectures on the Interpretation of Gastric Symptoms. Any member of the medical profession will be admitted to these lectures on presentation of a visiting card.

DRUGS BEFORE ANÆSTHESIA.

THE advantages of using hypodermic injection of various drugs before the administration of anæsthetics are not admitted by everyone. There are anæsthetists who never employ this "premedication," and there are surgeons who strongly object to it, believing that muscular relaxation is often deficient during operation when premedication is employed, and that convalescence is delayed. They question whether the action even of atropine may not interfere with the proper and speedy elimination of the anæsthetic. Nevertheless on the whole opinion appears to favour the use of preliminary hypodermic medication, although there is considerable variety in the drugs and doses recommended. From the point of view of the patient's comfort there is often undoubted advantage. The gain to a highly nervous, frightened, or restless patient from a sedative injection of scopolamine with morphine or omnopon is so great that it generally outweighs possible difficulties. The enthusiasts for preliminary medication make claims, however, that are scarcely justified in practice. It is said, for example, to "abolish all psychic impulses, maintain the normal ratio between respiration and circulation, render shock less liable both during and after operation, shorten the period of convalescence," and usually to prevent nausea or vomiting. This is surely an overstatement. Some experimental work recently recorded by J. T. Gwathmey[1] appears to show, as far as it goes, that in rats, at any rate, preliminary medication does exercise a protective influence on the tissues of the lung. Sulphate of magnesium (2 c.cm. of 50 per cent. solution) is the drug most approved of by this authority, and he uses it in conjunction with small doses of morphia.

[1] Amer. Jour. Surgery, December, 1927.

SUSSEX PROVIDENT SCHEME.—During the seven years of its existence, no less a sum than £33,534 6*s.* 2*d.* has been paid to the coöperating hospitals and authorities on account of services rendered to members of the Sussex Provident Scheme. From the sum of £332 17*s.* 3*d.* in 1921, the total has increased by leaps and bounds each year, the total paid over for 1927 being £9287 17*s.* 9*d.* In this latter year the Royal Sussex County Hospital received £4434 8*s.* 4*d.*, and other large amounts included: Royal Alexandra Hospital for Sick Children, £914 9*s.* 3*d.*; New Sussex Hospital, £887 17*s.* 3*d.*; Sussex Maternity and Women's Hospital, £544 9*s.* 1*d.*; and Brighton and Hove and Preston Dispensary, £540 9*s.* 3*d.* The poor-law authorities received £265 13*s.* 8*d.*, and the sum of £258 17*s.* 9*d.* was refunded to subscribers for treatment at non-coöperating hospitals and benefits under the supplementary section.

Modern Technique in Treatmen

A Series of Special Articles, contributed by invitatio on the Treatment of Medical and Surgical Conditio

CCLXIII.—THE TREATMENT OF LICHEN PLANUS.

Lichen planus may be of the most trivial impo as regards its effect on the patient or may be one the most distressing diseases. It may begin gradual and insidiously or acutely, but I do not think ever disappears very quickly. At the outset, therefor it is well to treat every case with caution, as it ma be difficult to tell, even in the presence of an apparent mild case, whether one may not be confronted rath suddenly by a serious outbreak.

The treatment may be divided primarily into th aimed at suppressing the disease as a whole measures which may be called constitutional, a the purely local measures designed to allay discomfo and disfigurement. As a matter of fact, there some overlapping of these measures, since liche planus is one of the diseases in which local traumatis determines in a striking measure the appearance new lesions.

Constitutional Treatment.

In determining the seriousness of the attack I thin attention should be paid chiefly to the presence absence of itching, and its degree when presen In the more moderate cases where itching is n extreme in its severity one may choose as the for of constitutional treatment the administration drugs. Of these, two stand out pre-eminently namely, mercury and arsenic—though opium an drugs of the phenazone group are often useful addition. If the itching be fairly severe and th eruption be coming out acutely, it will be better avoid arsenic and to rely on mercury, combined not with one of the above-mentioned sedatives.

The time-honoured liquor hydrargyri perchlori introduced by Liveing is extremely valuable a may be given in doses of ½ to 1 drachm three tim a day. Of recent years, however, I have bee greatly struck with the efficacy of the yello mercurous (not mercuric) iodide, which may given in doses of an eighth of a grain three times day, preferably between meals. If sleep is muc broken a dose of opium, say, tr. opii ℥xv., may given at night for a time.

As soon as the more acute phase of eruption a the irritation subside, this treatment may be change and arsenic substituted, and arsenic may also used by the more experienced from the beginnin where itching is absent and the type of eruption n very fiery. It may be given as liquor arsenical (℥v., t.d.s., post cibos), and, in my experience, is efficient in this way as in any other, unless the patie has an irritable alimentary tract and is unable tolerate arsenic by the mouth. In this case one ma resort to injection, and the most approved form recent years is the drug known as acetylarsan. may be given in doses of 3 c.cm. (equal to 0·7 of the salt) twice weekly, up to 15 injections.

In very severe cases, where itching is intens sleep almost entirely lost, and the patient's conditio threatening, I can confidently recommend the trea ment introduced by Thibierge and Ravaut, of lumba puncture and the withdrawal of from 6 to 8 c.cm of the cerebro-spinal fluid. In almost every cas in which I have used it the result has been dramati and not infrequently the whole aspect of the cas has changed within 24 hours, the maddening itchin subsiding, and sleep being restored.

It should never be forgotten that the nervou condition is almost invariably unstable in seve lichen planus, and that insomnia not only distresse the patient but aggravates the eruption. I invariabl keep my patients in bed for 48 hours after the trea ment by lumbar puncture, but, as a rule, in a cas

ere enough to demand this form of treatment the tient should be kept in bed in any case.

Lastly may be mentioned, as having a somewhat ilar effect, the radiation of the spine with X rays, a stille dose being given through an aluminium filter. ry strong claims have been put forward in favour this form of treatment, but I have not used it as does not appear to be so rapid in its action as the thdrawal of cerebro-spinal fluid, and I feel that are more absolutely certain that the latter does insidious damage.

Local Measures.

The local treatment of the more recent case depends the form of the eruption. Where the typical ne papule is present alone I find that lotions act tter than ointments, as the latter give a feeling of at. I generally find either liq. picis carbonis 2 per nt. in lotio calaminæ, or the following lotion icacious :—

enol cryst.)		Sp. vini meth. indus-	
mphor)	āā ℥ ss.	trialis	℥ iv.
drargyri perchlor.	gr. i.	Glycerini	℥ i.
tv. tragacanth. ..	grs. xv.	Aq. destill. ad ..	℥ viii.

In some cases and at some stages the horny licular papule is the chief lesion, and in such I find e following ointment useful :—

id. salicyl.	.. grs. xxv.	Ol. olivæ	℥ i.
pon. mollis	.. ℥ ii.	Adip. lanæ ad ..	℥ i.

is should be thoroughly rubbed in once a day and shed off before applying afresh.

Verrucose Patches.

Lastly must be mentioned the verrucose patches ually seen on the limbs and chiefly below the knees. ch patches seem to have little or no tendency to ontaneous cure and may last for many years if treated. Sometimes they are very irritable, at hers merely disfiguring. Many forms of treatment ve been recommended for them, and it is usually lieved that constitutional treatment is without ect upon them, though I have seen them flatten wn and disappear in a remarkable manner after mbar puncture.

The local treatment recommended includes that X rays, by freezing with carbon dioxide snow, and en destruction with the actual cautery. All of ese are unsuccessful at times, though one or other ay occasionally succeed. Of recent years, however, have had remarkable success by the following ethod. The patch is thoroughly rubbed in with ie following ointment :—

enol cryst.)		Ung. hydrargyri ..	℥ ii.
mphor)	āā grs. xxv.	Adip. lanæ ad ..	℥ i.

a area larger than the patch is then covered in th zinc oxide strapping, which, of course, adheres dly at the edges beyond the greased area, but eps the whole area, as it were, locked up in a water- oof dressing. It should be renewed daily, and should excite some inflammatory reaction it should be opped for a time and the part soothed down with ad or calamine lotion, and then reapplied after the action has passed away.

ARTHUR WHITFIELD, M.D., F.R.C.P. Lond.,
Consulting Physician to the Skin Department, King's College Hospital; and Emeritus Professor of Dermatology, King's College, London.

GLASGOW DENTAL HOSPITAL.—At a meeting in aid the building fund of this institution it was stated that e Dental Board of the United Kingdom had granted 000 towards the fund, £1000 of which is for equipment. r Holburt Waring, treasurer of the Dental Board, said at the work of the staff had to be done in "a derelict velling-house," and Dr. A. S. M. Macgregor, the Glasgow edical officer, added that the premises were insanitary id that it was impossible to make any provision for dental search.

The Services.

ROYAL ARMY MEDICAL CORPS.

Capt. J. C. Burns, half pay list, late R.A.M.C., retires on retd. pay on account of ill-health contracted on active service.

Lt. (on prob.) W. R. C. Spicer, from the secd. list, is restd. to the estabt.

TERRITORIAL ARMY.

Maj. H. E. S. Richards, having attained the age limit, is retd. and retains his rank with permission to wear the prescribed uniform.

Lts. E. Holmes, F. A. Smorfitt, and F. C. Lewis to be Capts.

Lt. J. S. Fulton, late R.F.A. (Spec. Res.), to be Lt.

A. C. King to be Lt.

Supernumerary for service with O.T.C.—Capt. W. R. Martine, from Gen. List, T.A., to be Lt., supern. for serv. with Med. Unit, Edinburgh Univ. Contgt., Sen. Div., O.T.C., and relinquishes the rank of Capt.

ROYAL AIR FORCE.

The undermentioned Flying Officers are promoted to the rank of Flight Lt. : G. E. Church and E. J. Jenkins.

Flight Lt. G. J. Griffiths is transferred to the Reserve, Class D.ii.

INDIAN MEDICAL SERVICES.

Lt.-Col. A. W. C. Young retires.

Lt.-Col. G. W. Maconachie to officiate as Inspector-General of Prisons, Bihar and Orissa. Lt.-Col. C. A. Sprawson, Principal, King George's Medical College, Lucknow, has been appointed a Member of the Board of Public Health, United Provinces, vice Dr. Saiduz-Zafar Khan, resigned. Lt.-Col. W. L. Harnett has been appointed to act as Professor of Surgery, Medical College, Calcutta, and Surgeon to the College Hospitals, vice Lt.-Col. Sir Frank Connor, granted leave. Dr. Rai Satish Chandra Banerjee Bakadur, Assistant Prof. of Physiology, Medical College, Calcutta, has been appointed to act as Prof. of Physiology of that Institution, vice Lt.-Col. A. C. MacGilchrist, retired. Dr. H. S. Dube, M.O.H., Delhi, has been appointed M.O.H., Lucknow. Dr. J. Misquitta, officiating M.O.H., Lucknow, has been appointed M.O.H., Dehra Dun, vice Dr. Bishan Dayal, appointed Assistant M.O.H., Unao. Lt. J. T. Stuart has been appointed to the Subcharge of the Dermatological Ward, British Hospital, Secunderabad. Lt.-Col. W. T. McCowen to Command Indian Military Hospital, Dehra Dun. Maj. F. W. Hay to be 2nd in Command, Indian Military Hospital, Dehra Dun. Dr. Pareshchandra Guha, Civil Asst. Surgeon, has been appointed to hold medical charge of the Sadr subdivision of the Kamrup District. Lt.-Col. S. R. Godkin to be Officer Commanding, Indian Military Hospital, Jullunder, vice Capt. S. Dutt. Capt. S. Dutt to be 2nd in Command, Indian Military Hospital, Jullunder, vice Capt. D. R. Tharpar, vacated. Maj. A. A. Kernahan to be 2nd in Command, Indian Military Hospital, Peshawar. Lt.-Col. R. C. McWatters, Civil Surgeon, from Nani Tal to Agra. Dr. Hafizullah Khan has been appointed to be temporary Assistant M.O. on Cholera Research Work, vice Dr. Muhammad Abdul Hadi.

COLONIAL MEDICAL SERVICES.

Dr. W. C. Smith, medical officer, to be Medical Officer of Health, Nigeria; Dr. G. V. Allen, senior bacteriologist, Kenya, to be Bacteriologist, Institute for Medical Research, Federated Malay States; and Dr. H. C. Wilkinson, medical superintendent, King Edward VII. Memorial Hospital, Bermuda, to be Director of the Medical and Health Department, Bermuda.

The following appointments have been made during the month which ended Jan. 31st: Capt. J. M. Wallace, Bacteriologist, Trypanosomiasis Research, Uganda; Mr. H. M. Soar, Mr. D. W. McLaren, and Mr. F. Kane, Medical Officers, West African Medical Staff; Miss E. M. Stratton, Lady Medical Officer, Gold Coast; Lt. C. W. Hope-Gill, Medical Officer for Tsetse-fly Investigation, West African Medical Staff, Nigeria; Miss J. R. Mason, Lady Medical Officer, Gold Coast; Mr. W. H. Emslie, Medical Officer, West African Medical Staff; Mr. A. C. Lovett-Campbell, Medical Officer, West African Medical Staff; 2nd Lt. H. C. Curtis, Medical Superintendent, King Edward VII. Memorial Hospital, Bermuda; and Miss E. A. Robertson, Medical Inspector of Schools, Federated Malay States.

JOHN HUNTER:
BICENTENARY CELEBRATION.

The Bicentenary celebration in honour of John Hunter followed the programme issued earlier by the Royal College of Surgeons of England. During the week the Hunterian Oration was delivered at the College by Sir Holburt Waring and the Thomas Vicary Lecture by Dr. G. C. Peachey. These will be found in our columns. Demonstrations were given daily by the Conservator of the Museum, Sir Arthur Keith, and the Librarian, Mr. Victor Plarr, and the Festival Dinner was held at the College on the night of Feb. 14th, the President, Sir Berkeley Moynihan, presiding.

We publish below a series of letters of extreme interest to all students of medical history, and especially of the lives of John Hunter and his elder brother William. They have been entrusted to us for publication by Dr. Louisa Hamilton.

THE HUNTERS AND THE HAMILTONS: SOME UNPUBLISHED LETTERS.

ANYONE who opens the calendar of the University of Glasgow will discover that its chair of anatomy was occupied by a dynasty of Hamiltons during the latter half of the eighteenth century. The chair was filled by Dr. Robert Hamilton from 1742 until 1756. He was the eldest son of William Hamilton, the minister of Bothwell, and was born in 1714. The manse of Bothwell and the farm of Long Calderwood, the home of the Hunters, were all within easy reach of the town of Hamilton, where the great Dr. William Cullen commenced the practice of medicine in 1736. Cullen was the friend and mentor of both the Hamiltons and the Hunters.

Turning again to the calendar, we find that a second Hamilton—Dr. Thomas Hamilton—occupied the chair of anatomy from 1757 until 1781. He also was a son of the manse of Bothwell, and the youngest brother of Dr. Robert Hamilton, whom he succeeded. He is a figure of importance to all students of John Hunter's history, for when John Hunter set out on horseback to join his brother William in London in September, 1748, being then in his twenty-first year, he was accompanied by a "Mr. Hamilton," who joined him at Bothwell. We know that Thomas Hamilton, the future professor, came to London in the autumn of 1748, and during the winter 1748–49 worked in William Hunter's dissecting-room—beginning his dissections at the same time as John Hunter. Sir Arthur Keith feels certain that it was this Thomas Hamilton who rode side by side with John Hunter for the 15 days occupied by the journey from Glasgow to London.

Dr. Louisa Hamilton, a living descendant of Thomas Hamilton, has just brought to the light of day two letters, written to him by his father, the minister of Bothwell, in 1748 and 1749, when he was studying in London. She also owns the 11 letters, most of them addressed to Prof. Thomas Hamilton, by his son, William Hamilton, who later succeeded him in the professorial chair at Glasgow.

Dr. Thomas Hamilton, after studying with William Hunter—who cited him as a witness when he accused Monro, of Edinburgh, of plagiarism in 1763—returned to Glasgow and succeeded to the chair of anatomy as the second Hamilton professor. Dr. William Hamilton succeeded his father Thomas in 1781, but overworked himself and died in 1790—at the a of 32. As a young man, this third Hamilton follow in the footsteps of his father—coming to Lond at the end of 1777 to study with both William a John Hunter. The charming and informative lett which he then wrote to his father and to his moth make up the greater part of the series whi THE LANCET has now the privilege of publishin through the courtesy of Dr. Louisa Hamilton.

Below is the anatomical dynasty of the Hamilto but the subsequent history of the family is interestin The third anatomist professor left behind him t young boys; the elder became Sir William Hamilto the pride of Scottish philosophy; the young Thomas, made his mark as a successful auth The great philosopher had three sons; the eld became Sir William Stirling Hamilton, who made name during the Indian Mutiny, and his son is t present baronet. A younger son, Hubert, was t father of Dr. Louisa Hamilton, who, with gre generosity, has presented the letters here reproduce with several others, to the Council of the Roy College of Surgeons, England. Dr. Louisa Hamilto has been entrusted quite lately with a cabin which she found to be packed with old fam correspondence, among which she discovered t 11 now published for the first time.

If we take the letters in the order of their dat they fall into three series. There are (1) the t letters written from the manse of Bothwell in t winter, 1748–49, to Thomas Hamilton in London; there are 11 letters, published herewith, writt 30 years later—1777–78—to Thomas Hamilton a his wife by his son William, just as he commenc his medical studies with the Hunters; and (3) th letters written by John Hunter (1783–88) when t great surgeon had reached the height of his fame, his old pupil William Hamilton, when the latter w achieving success as professor of anatomy in t University of Glasgow. These three letters will, trust, be published later.

SIR ARTHUR KEITH'S COMMENTARY.

Upon the whole correspondence, but especia upon the letters which follow, Sir Arthur Ke writes the following commentary:—

"What I have been hoping for in past years that chance would bring to light letters writ by Thomas Hamilton in the winter of 1748–49, wh he was a fellow-student of the raw John Hunter, j freshly arrived from Scotland. I have not lost hope

Rev. William Hamilton,
Bothwell Manse.

Robert Hamilton
(Professor of Anatomy, 1742–1756).

Thomas Hamilton
(Professor of Anatomy, 1757–1781).

William Hamilton
(Professor of Anatomy, 1781–1790).

Sir William Hamilton
(Philosopher).

Captain Thomas Hami
(Littérateur).

ther letters, but in the meantime we have now two ters—not yet released for publication—addressed him at this date by his father, the minister of thwell and owner of the estate of Airdrie. The st of these letters is dated 1748 and is directed to 'homas Hamilton, Surgeon, going to London.' ritten in pencil on the outside, is a ' direction,' ly imperfectly legible now, ' Dr. Ross at the red np, over the saddlers . . . further side of Leicester elds.' This letter and the other begin, ' My dear m '—warm-hearted, fatherly letters, which I hope . Louisa Hamilton will publish in full some day. the meantime she has given us enough to be going with. These earliest letters, written by an cestor six generations removed from her, show that the Rev. William Hamilton was an ancestor be proud of.

" We now come to the second and most important ies of letters, written in the winter of 1777–78, ien the War of Independence was being fought in nerica. Prof. Thomas Hamilton was then 51 years age and had occupied his chair during 20 of them. s son William, the writer of the letters, was at is time 19; at 17 he took his degree in arts at e ' College ' of Glasgow, and then went to Edinburgh study medicine for two years. His first letter is itten from Bath on Nov. 23rd, 1777, and is addressed his mother in Glasgow. We gather that his father, of. Thomas Hamilton, has been ill, and has been vised to seek treatment at Bath, whither his son d convoyed him before setting out to begin his udies in London under Dr. William Hunter. Almost e first sentence tells us we have made the acquaint-ce of a dutiful son."

ETTER Professor W. Hamilton to his Mother: Dated 23rd Nov. 1777:

BATH Novr. 23 1777.

y Dear Mother

We had this morning the pleasure of your Londonian ravan (as Dr. Stevenson calls it) which made us excessively ppy, and me particularly so to hear from your own hand at you were well. The praises you have bestowed on me all my father's letters (which I have read) and those u were so good as give me in my own one, make me very oud. I must however say that what I have done does not erit them, as it was only an attempt to show my father d you the sense I had of the benefits I have received m you and repaying in a small degree the care and atten-n you have ever shown me, and even gives me pleasure think that an opportunity has occurred that I might ow my gratitude to you by being of use to my father. ver since we set out it has always been my business to do erything I thought he would like and even to prevent s asking me and his will therefore has been entirely mine d from the time we left you which is near six weeks I nnot say my father ever has given me a sour or angry ok much less quarreled me for any thing I had done. y Father I need scarce tell you is getting better every day d walks full as well as he did when he was beginning to out with his last sore leg. He is perfectly independant my assistance so much so that once or twice he has got before me (I rose at nine) put on all his cloaths and ne to the pump room, and behold when I came to raise m he was gone, to my great amazement the first time. r. Trollope who is a vastly good kind of man and very greeable, tells my father he thinks in a month or two he ill walk down to Scotland. He has got nothing done about s wig yet and I have been preaching up to him to get a w one. I wish you would second me. I did not go to the all on Friday. You ask me if I have been at the rooms, that I fancy you mean the ball as at other times nobody es but subscribers where they game or walk about there e few people go there but gamblers and old ladies (who e the bye are mostly notorious cheats) and no party is ayed there under half crown whist or shilling quadrille, d in the card room at the Ball I was at a french duke d an english one were laying fifty and a hundred pounds the hands—so great a sport of gaming is there at Bath. ovr. 24.—I delayed closing my letter till to day in case y thing happened worth writing you. Dr. Gusthart has lled twice on my father and we are to dine with him on ursday next. I wish your intelligence about Mr. ennistowns coming to Bath may be true. I intend writing Brown next packet as this one will not hold what I ve to say to him.

elieve me ever to be My Dearest Mother your
Dutiful son &c.
" W. HAMILTON "

P.S. Present my Dutiful compts. to My Aunt and Mr. Ritchardson and all my friends and acquaintances.
" W.H "

As I find I have enough of time and a great inclination to continue I will not end where I intended. I have been straying on the Banks of the avon to find Mr. Simkins muse (which it is with great probability supposed he left at Bath.) But as I have been unlucky in that attempt I shall take a plunge in the Bath and see what that may do as my father has sent Mr. R. a poem whether of his own or not I shall not determine. We have no news here the Quid nuncs of this place are abusing government and the indispensible for sending their expresses by vessels of no force for they make no doubt but the packet with the news is taken. The Bells are just begun to serenade us, some great man has arrived, it is one of the most infernal noises imaginable we are close by the abbey and to have 10 bells ringing chimes at once is disaggreeable beyond any thing you can conceive.

Adieu my Dear Mother.

" Young William Hamilton set out from Bath, where he left his father, the professor, to take up his medical studies in London on Dec. 16th, 1776. Before starting he wrote another letter to his mother which contains things worthy of record here, particularly his reflections on the young clergymen whom he found frequenting the gaming tables at Bath."

LETTER Professor W. Hamilton to his Mother: Dated 6 Decr. 1777:

BATH Decemr 6 1777.

My Dear Mother

We on Monday had the pleasure of your letter which made us I assure you very happy and we wait with impatience for your Sundays packet. My Father continues mending and except his bending the knee of his left leg a little when he walks, walks almost as well as ever he did, he is been perfectly well since I wrote you he does not find any sourness of his stomach since he came here, and eats pretty well. He drinks every day a pint (mutchkin) of porter and except that, never tastes any thing stronger than water or small beer, the Drs. have pressed him to drink a little wine which he has absolutely refused. We this day lost Mr. Trollope which I am very sorry for he was a very merry kind of man and was the life of our company. We have got a scotch Dr. from Exeter called Ker and a lady with him whose name I do not know they dined with us yesterday for the first time the old lady does not seem to want the gift of the Gab.

I go off for London the week after next I wish you had sent Mr. Young's direction. I wrote twice to George Reid to send it me but have heard nothing from him so that I must just stay in the inn in London till I can find some of my acquaintances out and get a room. I am sorry to hear the bad news from G. Burgoyne I hope Bob Buchanan or Billy Cullen were not with him besides many killed three entire regiments are cut off to a man, and the rest have laid down their arms. One of the gentlemen of our house gained the spray of Myrtle at Batheaston I saw his poem, it is indeed a very poor one not much better than our greek class productions and if this is the best what must the worst be, but in all these prizes favour goes farther than merit. I was at the Ball on Monday and at the play on Thursday I was amazed to find that the young clergymen here dance and play at cards in the public rooms but I find now that there are among them who are remarkable for gambling and every kind of vice and that there is but one part of a bucks character they carefully avoid and that is fighting which it is said they have a mortal aversion to; a man must have a pretty modest assurance to preach against vices on Sunday which have been his sole employment thro the rest of the week, this character I would fain hope is not a just one all I can say is I had it from a gentleman when I expressed my surprise at their openly playing at cards with people who seemed to be playing high. We saw Mrs. W. Bogle and her daughter to day they are both very well, Miss Bogle I think is very pretty. There no word yet of Mr. Houston so I cannot write my aunt to thank her till I get my buckles, if they come after I leave Bath my father will take care of them and bring them down as I shall have no use for them in London.

Decemr 7th. I am happy to tell you a piece of news which I hope true, my father has got acquainted with a gentleman in his situation from barbadoes and a surgeon, who told him that on friday last he dined in Bristol with a gentleman from Halifax who left it the 2 of Novr and who said the day before he left it dispatches had come there from G. Burgoyne who had pushed his way to Albany and where he said he hoped he would be able to open a communication to N. York and keep it up thro the winter, in this case the defeat of Burgoyne is a story made up by the three deserters

who were the only authority for it at Quebec, the gentleman says his friend is a man of veracity and the present bad news is not at all believed at Bristol. I was at the Abbey to day and heard the Bishop of Bath and Wells. Do not forget to read our Bristol news to professor R. I won't write it him as I know it would grieve his righteous spirit. My Father was out in a chaise with Mr. Trollope last week and he and I will go out some day this one, it is very cheap you have a chaise for 3 hours for 5 shillings. We have a flaming paragraph in the Bath papers of the honors shown Dr. Graham at Glasgow (he is now here and probably put it in himself,) they say he had the freedom of the town and a fine entertainment given him. I shall write you whenever I get to London. Dr. Gusthart would take no fee from my father. Present my dutiful compliments to my aunt and remember me kindly to all my friends and acquaintances. I need scarce subscribe myself (for you will know my hand) your dutiful son

"W. HAMILTON"

P.S. I have enclosed a letter for Miss Brisbane pray seal it up and send it as soon as possible.

"On Dec. 18th, 1777, he reached London at 3 o'clock, having seen 'Windsor Castle and passed thro Eton where the great school is.' The journey cost '3 pound, 7 shillings,' but he still had in his pocket, so he informs his father, 'two guineas and some shillings.' He had also 'draughts on Mr. Coutts.' On his arrival he had to put up at the 'Golden Cross,' Charing Cross because his two Glasgow friends, Mr. Young and Mr. George Reid, who were studying with the Hunters, had 'disappointed him,' neither having given him their 'proper direction.'"

LETTER Professor W. Hamilton to his Father: Dated 18 Decr. 1777:

My Dear Sir

I arrived here about 3 o'clock we dined at Hounslow: I went immediately on coming, to call on Mr. Young and Mr. Rix was so good as go along with me but could find no such person there the woman began to scold us for calling as she said she had had five people this very day enquiring for the same person we then tried No. 3 old round court and with the same success. I immediately determined to go to Dr. Hunters, and ask for the servant that waits at the class door and see if we could know from him the proper direction. We went there and he said he knew both Mr. Young and Reid and could be sure Mr. Reids direction, he came out and a young man with him (probably Mr. Cruikshanks[1]) who told me Mr. Reid had left that only a few minutes before and that he lived in Queens street east at the very end of it and I begged he would tell Messrs. Reid or Young if he saw them to night, if not to morrow morning that I wanted them and would be glad to see them at the Golden Cross which he said he would do. What made me think he was Mr. Cruikshanks was his asking if my name was not Hamilton as he said Mr. Reid had mentioned my intention of coming to town to him and asked if I had not letters for Dr. Hunter I told him I had, but had them not on me that I could not call then as I was just come to town but would do myself that pleasure very soon. We then went to Georges lodgings which were at least two miles off up across oxford road and beyond Cavendish square, he was not at home but they would tell him that I wanted him (if he came home soon enough) to supper if not to morrow morning. We came back to Oxford Road and took a coach to the Golden cross where I stay all night and Mr. Rix went home. Our journey came in all to about 3 pound 7 shillings. We saw Windsor castle to day and passed thro Eton where the great school is. I have still 2 guineas and some shillings. This is an amazingly large town and vastly well lighted for these are the only two observations I have had time to make yet. I hope you do not feel yourself lonely since I have left you. I hope we shall meet in a short time and by that time you will be in a great measure well.

I felt very much on parting with you tho for so short a time and the pleasure I shall feel on seeing you again is the only thing that makes me happy. I wished I had stayed a little longer with you that morning as the inn was locked up when I went and I and the driver (for the chaise just came at the same time) had to rap with our heels at the Gate for ten minutes. Present my compts. to all the family and Believe me ever to be your dutiful son and humble servant

"W. HAMILTON"

Golden Cross Charing Cross
LONDON
Decr. 18 1777.

[1] His guess was right. William Cruikshank, of Glasgow, became assistant to Dr. William Hunter in 1771, was at first an inmate of Dr. Hunter's house, a most accomplished anatomist, and later was friend and surgeon to Dr. Samuel Johnson.

"Note the letter, written to his father on the day of his arrival in London, Dec. 18th, 1777, is subscribed 'Believe me ever to be your dutiful son and humble servant, W. Hamilton'—a subscription which modern fathers have seldom the pleasure of reading."

"Next day, Dec. 19th, he again writes to his father, informing him that he has obtained lodging in Queen-street, Golden-square—close to Dr. Hunter's school in Windmill-street, and that it was necessary to 'direct' to him, 'at No. 26 (brass plate) Queen's Street Golden Square.'"

LETTER Professor W. Hamilton to his Father. Dated 19th Decr. 1777:

My Dear Sir

I wrote you and my mother last night of my arriva in town and of my ill luck in missing Mr. Reid and Young But just after I had sent off your letter Mr. Reid came in and supped with me. He advised me to board at first as the people were apt to impose on a stranger he recommended me to a house where he had been recommended himself by Mr. D. Drummond and where he had staid six weeks but left it as he thought he could live cheaper. This morning he and Mr. Drummond called on me and we went and looked at it it is kept by two old ladies one a Mrs Wilkes and the other her sister the terms are a guinea week for breakfast dinner tea and supper a neat little room and a light closet it is in the second storey and the only thing we must pay for besides is fire. I accordingly took the room for a month till you come to town. Mr. Young called on me to day and said this house he had marked out for me. It is in Queens street golden square and not farther from Dr. Hunters than you are from the pump room, as the street goes off windmill street opposite to his house I have not waited on Dr. Hunter yet nor Mr. Hunter[2] find it is not customary to dissect without attending the class and that I may take out a ticket now which will serve me till the same lecture in the next course as the Dr. has a month of this course to go thro. Mr. Hunter has only one set of lectures in the winter he only reads three a week so that if I enter now I will only lose four and twenty lectures and he does not finish till Aprile, this loss Mr. Young has offered to make up from his notes. But of these things I can write you more fully to morrow after seeing the Hunters whom I delayed calling on to day till I got money for one of my draughts as I must probably fee him just now and Mr. Drummond is to attend me to Mr. Couts to morrow morning with whom he is acquainted. Mr. Cruikshanks I hear is very ticklish with regard to his wife and is ever cast out with Mr. Young who he thought came too often to visit him, but this I beg you will take no notice of and burn the letter after you have read it, as he is a man who may be of great use to me, and whom I would not for the world disoblige. I find the rates are 3 guineas for attending the dissection room injecting for one course and five for two courses, bodies are at present difficult to get there are no whole ones in the dissection room at present, I went there along with G. Reid he introduced me to Cruikshanks I have seen several Edinburgh acquaintances here and some Glasgow ones. In the house where I stay there is a room next mine a much larger one and at the same price which will do finely for you when you come to town. There is a lady and her son here in our house they are the only boarders, he is a clerk to the admiralty but is going to leave the house soon as he thinks it too far off. Direct to me at No. 26 (brass plate) Queens Street Golden square. What makes brass plate necessary is there being two numbers on the door 26 on the brass plate and 21 painted on according as you count from either end of the street.

Present my complts to all the family and Believe me ever to be your dutiful son & affectionate humble servant

"W. HAMILTON"

LONDON Decr 19
1777.

"In the next letter (Dec. 22nd) we are brought closely in touch with the Hunters, and are given a favourable impression of them, particularly of John. The newcomer, being the son of an old friend and companion, received the warmest of welcomes from John Hunter—as this letter shows."

[2] It may help readers if I remind them that in 1777 Dr. William Hunter was 59 years of age, had been established in the Great Windmill-street school for nine years, having first Hewson as his assistant, then William Cruikshank. John Hunter, who then lived in 42, Jermyn-street, was then 41 and had already given three courses of lectures on surgery, his first being delivered in 1773. (See Dr. George C. Peachey's "Memoir of William and John Hunter," 1924.)

LETTER Professor W. Hamilton to his Father: Dated 22nd Decr. 1777:

My Dear Sir

I would have wrote you on Saturday night but went to Dr. Hunters lecture and after the class I delivered my letter, the Dr. asked me and G. Reid who was along with me, to come and eat an oyster with him and we sat till eleven. The Drs class meets from half after one till half after three and on Saturday he had two meetings a night one from six till eight at which I was. This week we meet for tuesday and saturday twice a day he cannot meet at night on the other nights as Mr. J. Hunters lectures in his theatre then.[3] I went to day to fee the Dr., we give the money to Mr. Cruikshanks but he said he would speak to me about that tomorrow when he gave me my ticket. I offered him the dissection fee, but he put off the acceptance of it in the same way. The Dr. is particularly hurried this week as he is affraid his body won't keep, he is on Surgery just now, he explained lithotomy and passing the catheter to day. Bodies are vastly scarce at present some of the men have been taken up and tried but I hope this will be soon over. I waited on Mr. J. Hunter today he said he was vastly happy to see me and enquired very particularly about your health and both he and the Dr. begged their complts to you, he would take no fee from me and said he was happy to have it in his power to be of use to your son, he asked me to dine with him to morrow, and I go to his class to night at seven. The Dr. is an exceedingly good lecturer and vastly plain, he tells a story w grt. humour one or two of which he introduced into his lecture on Saturday. He was vastly chatty with us at supper, G. Reid and he seem to be very intimate he has breakfasted once or twice and dined with him I called at Couts & coy. on Saturday and got the draught paid I called on Bob Hamilton the same day and yesterday he called on me and pressed me to dine with him which I did and drank tea and supped. He boards with a gentleman and sisters who was purser on the Granby before him, he lives No. 73 cannon street in coming home which was about eleven I walked the length of St. Pauls, and then took a coach to which he was so good as convoy me He intends paying Bath a visit for two days in the beginning of January. He is not determined abt going out this year. He expects Mr. and Mrs. Arnot in town every day. He joins me in dutiful compts.

Believe me ever to be My Dear Sir
your dutiful son
"W. HAMILTON."

LONDON Decr. 22
1777.

P.S. I have seen St. Pauls the tower guildhall Bank of England the exchange moorfields the park St. James's queens pallace &c., but I have not been within St. Pauls or the tower yet. I have wrote my mother twice from London.

My Direction is No. 26 (brass plate) Queens Street Golden Square this I send in case you have not got my last.

"In the next letter we have Christmas Day recognised by the sending of 'the compts of the season,' the formula 'A Merry Christmas and a Happy New Year' not being yet stereotyped. The Dr. Black alluded to is no doubt the famous Prof. Joseph Black, friend of both the Hunters and the Hamiltons. 'A Mr. Hume' is Mr. Everard Home, afterwards Sir Everard Home, Br. At this time he was 21 years of age and this is the first notice we have of him as a demonstrator in Dr. William Hunter's school. The spelling gives us the pronunciation of 'Home' in Sir Everard's own circle."

LETTER Professor W. Hamilton to his Father: Dated 25th Decr. 1777:

My Dear Sir

Your letter which I received on tuesday gave me real pleasure it made me happy to find you continued mending and did not need any assistance. I have taken this opportunity of wishing you the complts of the season, and to inform you of my being in very good health. I dined on tuesday with Mr. Hunter, along with a friend of Dr. Black's, his wife is a very pretty woman and a very aggreeable one. Yesterday got my ticket for the Drs. lectures and I feeed Mr and Mr. Cruikshanks for this course. I am affraid I shall not have much for my dissecting fee as bodies are apt to be got and there are several before me. G. Reid has promised to get me one and John the servt who is a very necessary man to be great with, to whom G. Reid has introduced me and spoke for me has promised me the first that comes. The way I am to have it is this, if a body comes Mr. Reid (who has told the pupils he is going out soon to lift one) is to say he got it and of consequence it belongs to him and he is to chuse me for his partner and then we pay the Body to the servt. If a Body be difficult to be got I will see if I can get a head or a leg or an arm or any thing to be doing with. Besides Mr. Cruikshanks there is an assistant in the Dissecting room a Mr. Hume brother in law to Mr. Hunter, Mr. Young introduced me to him, and he seems to be a very good young lad. The Dr. is very near done with surgery and has the nerves still to show and some principles of Midwifery they say his course will not be done before the 20 of next month. Mr. Hunter began yesterday the application of his principles to practice he enter'd on abscesses in his lectures he does not describe any operations except the radical one for Hydrocele, which as it is somewhat odd I shall mention it, he makes an aperture in the cyst lets out the water and thro this opening which he makes pretty large he fills the cavity with pretty thick poultice and lets it stay there till the granulations force it out, in this way he says he has produced several radical cures. I have seen nothing lately worth mentioning. Messrs Reid and Young join me in Compts. to you.

Believe me ever to be My Dear Sir your dutiful son
"W. HAMILTON"

LONDON Decr. 25
1777.

"On New Year's Day young Hamilton wrote both to his mother in Glasgow and his father in Bath. These letters are among the most interesting of the series, revealing the writer both as a dutiful and loving son and one with a real sense of humour. The frank recognition of the employment of 'resurrection men' is interesting. In the letter to his father young Hamilton brings us again in touch with Everard Home."

LETTER Professor W. Hamilton to his Mother: Dated 1st Jany. 1778:

My Dear Mother

I had some days ago the pleasure of your letter which made me very happy as I was wearying much to hear from you. I would have wrote you since Thursday but have been close employed w the Hunters and the Dissecting room, which took up all my time as we had two lectures a day. I wish you the compliments of the season and many happy returns of the new year. I was very happy to find Mr. Wilson had won his plea it was but justice he should. I have no news to write you indeed I would be ashamed to write any after the way the last turned out. I have been through very little of London lately as my forenoon is taken up dissecting, I am now at no loss in the streets tho at first I certainly looked strange for a woman one day passing me looked me in the face and said Oh Sawney is this you. I was so angry at the speech that I could have struck her had she been a man and I had an excellent stick in my hand. What irritated me most was her finding me out to be scotch by my face when I thought I looked very like an englishman. This is the only affront I have met with since I came here indeed the scotch at present are rather respected as otherwise. I am vastly pleased with both Mr. Hunters lectures they are worth coming to London to attend, besides the benefit one derives from dissecting. I expect my father soon here so that he will be home by the first of february at the furthest, and very probably sooner. I would have wrote Mr. Richardson but have been so hurried I have not had time, but will do it this week. G. Reid is pretty well I believe I have not seen him to day. You must excuse this short epistle (scarce worth 8 pence).

Present my dutiful compliments to my aunt and Mr. R. &c.
Believe me ever to be My Dear Mother your dutiful son
"W. HAMILTON"

LONDON Jany. 1st
1778.

LETTER Professor W. Hamilton to his Father: Dated 1st Jany. 1778:

My Dear Sir

I gave me pleasure to find by your last letter that you continued mending and would see me soon. I would have wrote you long before now but have been kept very busy as Dr. Hunter has met twice a day for some time past and on the days he did not Mr. Hunter did, which takes up all the night and in the forenoon I am close employed in the dissecting room. I have got a leg and thigh from the body the Dr. showed the operations upon and I had it injected, I should have done it myself but Mr. Hume said, as it was rather putrid it was not proper for a first attempt as

[3] Dr. Peachey has drawn attention to the fact that John had his brother's theatre for only two courses—1776–77, 1777–78. After then the brothers quarrelled over their shares in the discovery of the true structure of the placenta, and John took a room for his lectures in the Haymarket.

I should be apt to burst the vessels, and he did it and very well injected it is. I have been employed upon it since sunday and I have not got to the knee yet. Bodies are vastly scarce two resurrection men are taken up and all the burying ground is watched so that I am affraid we shall have little dissecting for some time there is nothing but an arm and my leg in the dissecting room at present. I am exceedingly pleased with the Drs. and Mr. H.'s lectures, in Mr. Hunters last one we had his theory of the union of fractured bones which he says is done in three ways. The most common is by the lymph being extravasated and vessels shooting thro it from one bone to the other and making it cartilage, this cartilage is absorbed then, and cells are formed in it fit for the reception of the earth and it becomes bone, this is called joining by first intention. The second way is where the bones lye close together and inflammation comes on, then they unite by the adhesive inflammation. The third way and which is the one probably takes place where the cure of a simple fracture is tedious, the blood thrown out loses its living principle it is therefore an extraneous body and the vessels cannot shoot thro it which prevents the first way and by its being interposed between the ends of the bones it prevents the second way of union, nature then begins to get it absorbed and while this is doing granulations arise from both ends and meet together and in these first a callus and then bone is formed as was in the gelatinous lymph. Mr. Hunters course seems to be an exceedingly good one it principly treats the theory of Surgery and little or nothing of the practice. I have enclosed a letter for Mr. Hamilton I hope you will think it a proper one, you may put a wafer into it and send it to him.
As to St. Georges hospital I might go for a quarter but it is 10 guineas whereas a whole year is only twenty and Mr. Hunter told me if I had any thoughts of being here next winter it would be better to delay it at least till you came to town.
If I can remember right you began pumping on the 5th or 6th of November and you got 200 strokes at first, then after a week or two you had 300.
I shall conclude this epistle with wishing you a happy new year and many returns of it. Present my complts to all the family
Believe me ever to be My Dear Sir your dutiful son
" WILLIAM HAMILTON "

LONDON Jan. 1
1778.

I have enquired where the best bougies are made, you may tell Dr. Ker, it is by one Hodges and if he wants any I shall be happy to serve him and write me how to send them down.

" In the concluding letters of the series, two to his father, and one to his mother in Glasgow, we get in a few sentences glimpses of a busy student life, of old London, and of pleasant domesticities."

LETTER Professor W. Hamilton to his Father: Dated 3rd Jany. 1778:

My Dear Sir
I just now had the pleasure of your letter I own myself much to blame in not writing you, but it was entirely owing to my time being compleately filled up.
I have got all the thigh of my leg dissected I keep on all the muscles and dry them with the vessels I paid half a guinea for it and the injecting. I saw Bob Hamilton lately he known nothing of Mr. and Mrs. Arnots motions and has been expecting them for this some time, he spoke of writing you last sunday, he intended then to see you at Bath next week. I have not heard from Glasgow for some days I expect a letter on monday in return for a letter I wrote my mother. For these three or four days Mr. Cruikshanks has been showing the nerves he does it on just such a preparation as yours and which appears to have been kept for a considerable time.
I hope soon to see you in London and much stronger than when I left you I hope you have had no nephritic complaints, lately. G. Reid and Mr. Young with whom I sup to night beg to be kindly remembered to you. Believe me ever to be your dutiful son and humble servt
" W. HAMILTON "

LONDON Jany. 3
1778.

LETTER Professor W. Hamilton to his Father: Dated 6th Jany. 1778:

My Dear Sir
I this day received your letter and was sorry to find the cold weather pinched you. I heard from my mother on Tuesday last She said then she was going out of town for some days which I fancy has prevented her writing. We had a fire last night opposite to the head of our street we were all a good deal alarmed as at first we thought it was nearer, I had all my cloaths in my trunk in a few minutes and was ready to have carried it to the Dissecting room had it been as bad as we feared it was, it burned w amazing violence and the houses on both sides were saved more from accident than good guiding as the water was at first very scarce and the engines every now and then stopped for the men to drink porter. I was in the crowd from four till near six in the morning. I never saw as few people at a fire in my life. I should have wrote you after its happening lest you might be uneasy about me. I shall wait on Mr. Tait and speak to his nephew who attends Dr. Hunter some day this week as I hope my leg will be done in two days, and then I shall have more time in the forenoon. Present my complts. to the family and Believe me ever to be your dutiful son and humble Servt.
" W. HAMILTON "

LONDON Jan. 6.
1778.

P.S. I hope you got a letter from Dr. Baillie which Dr. Hunter gave me to direct to you about a week ago.
" W. H "

LETTER Professor W. Hamilton to his Mother. Dated 13 Jany. 1778:

My Dear Mother
I this day received the packet by Coll. Abercrombie fo which I am much obliged to you. I was sorry to find by your letter that you was not well I hope long before thi time you have got better of your complaint. I hear yesterday from my father who is vastly well I wrote yo he had had a fit of Nephritis but had free of the stone whic perhaps in some measure caused his other complaints. expect to find him much better than even when I left hi which is just a month to morrow. I heard all about Mis Reids marriage a week ago and wrote it to my father. intend to have a slice of the play to night as I have bee close employed either dissecting or at lecture since thi morning till four when we dine and as I am light and i good spirits frm your packet. My Time is at preser entirely filled up from half ten till half after one and fr that till near four at lecture for the Dr. lectures two hou always and some times more. I dine at four and fr five to six write then I go to the Drs. if there be an eveni lecture till eight and on Mondays Wednesdays and Frida Mr. H. meets at seven for an hour, so that you see I a pretty close kept. My Father is to be in town on Saturd night at which time we shall both write you. Present m dutiful complts to my aunt remember me to Mr. Richards I shall answer his letter soon. Believe me ever to be
My Dear Mother your dutif
son and humble Serva
" W. HAMILTON "

LONDON Jany. 13
1778.

" The rest of the story can be found elsewhe and much of it is in the 'Dictionary of Natio Biography.' We do know from other sourc particularly from letters written by Dr. Willia Hunter in 1779–80, that William Hamilton h a most successful period in London. He beca an inmate of Dr. Hunter's house, then his assista and subsequently was given charge of the museu Even when at Windsor Castle attending on Queen, William Hunter, in a moment of leisu wrote to the ageing professor of anatomy Glasgow in the warmest terms of praise in fav of his son. In 1781, came the father's final illne his son, William, left the Hunters and returned Glasgow to succour his father and to become assistant and then successor. Then followed untimely death, in 1790, at the age of 32. A account of his life was published in the *Transacti* of the Royal Society of Edinburgh for 1792, and brightest part of that life were those two years spent in London with the Hunters.

" Three letters which John Hunter wrote to about patients are not reprinted here. The fact t Dr. William Hamilton preserved them shows value he attached to them and to their writer. letters speak for themselves—and they also speak behalf of William Hamilton. The one point one notes in these letters—as in the surgical lit ture of their period—is the attention and study g to hydrocele, an ailment which occupies so in

scuous a place in current medical literature. Will appendicitis be relegated to a similar position in another century and a half?"

JOHN HUNTER'S EXPERIMENTS:

EVIDENCE OF AN EYE-WITNESS.

In her treasure-trove of correspondence Dr. Louisa Hamilton has discovered yet another letter which gives us quite new information regarding the point which John Hunter had reached in his discoveries in the year 1771—the year in which he and Jane Home were married. John Hunter was then in his forty-fourth year and had been a surgeon to St. George's Hospital for three years. The letter was written by Dr. W. Irvine in the summer of 1771 to his old friend Prof. Thomas Hamilton—father of the young man whose letters are reproduced above. Dr. W. Irvine and Dr. Thomas Hamilton had both studied under Dr. William Hunter; Dr. Peachey has drawn attention to the fact that Dr. W. Irvine was also used as a witness when Monro secundus was accused by Dr. William Hunter of plagiarism.

LETTER Dr. W. Irvine in London to Prof. Thomas Hamilton, University of Glasgow.

LONDON, June 17, 1771.

Dear Sir,

You did not, I dare say, imagine to see my name at the foot of a letter of this date from London, but I have been detained, longer than I expected, about Dumfries and in Yorkshire, and have been so agreably employed here that I could not think of leaving it sooner. I have spent most of my time for the fortnight past with John Hunter, from whom I have received a great deal of what is new to me and which, tho' it may not be so much to you, cannot however be disagreable.

John Hunter has observed that if a wound be made into any cavity, if the edges are applied so as to be in close contact, they cohere, as on other occasions, by the first intention without suppuration; but if instead of applying the edges close to each other anything is put in to prevent their touching each other, an inflammation and suppuration is produced, which extends itself over the whole cavity to which the incision is made, how large soever the cavity may be. This he has found to be the case by many experiments and he thinks it may be applied to account for several things in surgery and to improve others.[4] Thus in the hydrocele, when a wound is made in the scrotum thro' the tunica vaginalis, the water flows out, the scrotum collapses, the wound heals up and the water collects again. But if the wound in the scrotum, however small, is prevented from healing by any means such as a caustic, a seton, lint, sponge-tent, etc, destroying the tunica vaginalis, an inflammation attended with suppuration is produced, which extends itself over the whole surface of the testis and tunica vaginalis. Granulations spring from the testis, an adhesion between that and the scrotum is produced and the disorder is cured. He founds his method of operating on the hydrocele on this idea which he has performed above ten times, with all the satisfaction he could desire. The first time he performed it was on a Nobleman who went everyday after the operation to the house of Peers till he was cured. He makes a small wound with a lancet in the most dependent part of the scrotum, so as to be free of the testis—of the size of a common bleeding. As little of the water is allowed to escape as possible. A sponge-tent is put into the wound so as to penetrate through the whole solid part of the bag. After, a proper bandage remains. The night after the operation, or next day, an inflammation which ends in suppuration—attended with swelling of the scrotum and pain in the spermatic cord come on, and the tent comes out of itself The water flows all out; pus flows from the wound. The parts are poulticed and all is well in three weeks. In some cases there was a considerable pain in the back, but scarce any fever. He has observed an inflammation and suppuration similar to this after tapping both the abdomen and thorax, when the wound did not heal up, and that he has dissected subjects who from this had a suppuration over the whole surface of the viscera in the abdomen or the thorax.

He has made several curious experiments on the blood, from which it appears to have something of a vital principle in it, so that all parts where it stagnates become vascular, which they would not otherwise do. This is confirmed by the following experiment. He made two ligatures on the jugular vein of a dog at a little distance from each other, so that a quantity of blood was contained betwixt them. The external wound was dressed and healed, and the dog, after living several months, was killed and upon examining the jugular vein a number of fine blood vessels were found in the cavity which contained the blood, arising from the two ligatures and running in various directions, into the cavity of the vein. The vein betwixt the ligatures was as large as at first, but no blood was found in it, the whole was a congeries of vessels. No vessels are ever found in the vein when it is emptied of its blood before the ligatures are made.[5]

Mr. Hunter has dissected many subjects upon whom the operation for aneurism had been performed.[6] No vessels were ever found in the artery betwixt the ligatures, though the lateral branches were greatly enlarged. From this[7] he accounts for the formation of Callous in a broken bone. A quantity of blood, thrown out on the two surfaces, becomes vascular. That this vital principle of the blood is retained after its separation from the body and sometimes after coagulation. This accounts for many surprising things which are every day being performed here, either by himself, or by others, and which if they came from any other body but one of his credit, could not be believed and which you yourself may accuse me of credulity for believing but I assure you I have seen almost all of them myself.

The pulling a diseased tooth from the head of a person and putting a fresh tooth from another in its place and this growing firm as the other teeth I have seen, and I am assured by John Hunter that these engrafted teeth get vessels and nerves and that this happens when a sheep's tooth has been grafted into a human head.[8]

The cutting of spurs from the heel of a cock and making them grow in his head, J. Hunter has often performed and has such cocks at present. Nay more, he has many hens just now into whose abdomen, when young, he has put the testis of a cock just separated from his body and this testis has got blood vessels and nerves from the part of the abdomen or viscera to which it is applied; has increased in size, yields a white liquor when it is cut into, but has not, as he had imagined, impregnated their ova nor altered their natural disposition.[9]

He is tomorrow to perform an operation of this kind before several gentleman. He has procured a couple of Jack Apes. Into the forehead of the one he is to graft the horn of a calf, and into the other the horn of a young deer and he proposes, as Gavin Pettigrew[10] has long complained of want of money, to send them to him and doubt not that by shewing them up and down the country he will make an immense fortune. The success of these operations depends on there being little time lost betwixt the separation of the part from one animal to the other, tho' it succeeds after being separated longer than can well be imagined.

Not to bore you I will mention one other thing out of a great number—Viz. male animals of the more imperfect kinds have small testes in the Winter and a very large in Breeding time. Mr. Hunter has preserved six male sparrows,[11] killed betwixt December and the middle of

[4] It is of interest to note that the problems which John Hunter—a Scotsman—was investigating in London during the "sixties" of the eighteenth century were solved by Lister—an Englishman—in Glasgow during the "sixties" of the nineteenth century.

[5] From this account we see that John Hunter was still searching for proofs of his belief that the blood is a living tissue. This belief began in 1756 as he watched the formation of blood islands in the developing chick. So far as we know Dr. Irvine's account is the first information we have of these ingenious experiments by Hunter on veins.

[6] Hunter's first operation on popliteal aneurysm, by tying the femoral artery, was done in 1785, 14 years after this letter was written.

[7] "This" we take to refer to the organisation of the clot in the ligatured vein.

[8] Hunter grafted human incisors in the combs of cocks. One of his specimens is preserved in the museum of the R.C.S. The union is effected by a vascular process which has grown from the substance of the comb into the open canal of the root of the incisor.

[9] The sole record of these experiments is a brief paragraph in John Hunter's lecture (vol. i., p. 391, Palmer's Life of Hunter, 1837). This passage runs: "Here is the testicle of a cock, separated from that animal and put through a wound made for that purpose, into the belly of a hen, which mode of turning hens into cocks is much such an improvement for its utility as that of Dean Swift when he proposed to obtain a breed of sheep without wool." Did Hunter ultimately find that the disposition of these engrafted hens did become changed? The extract from his lectures (1792) seems to suggest he did. Berthold, of Göttingen (1849) is usually supposed to have been the first to transplant with success the genital glands of fowls.

[10] This I take to be John Hunter's particular friend mentioned in letters written by him in 1761, when in Belleisle to his brother William in London. In these letters Pettigrew is asked to wait on Dr. William Hunter and obtain from him instructions regarding certain of John's private affairs. Apparently the experiments failed and Gavin Pettigrew remained poor.

[11] These specimens are in the Museum, R.C.S., and are still in a perfect state of preservation.

April. The one killed in December has testes not bigger than a small pin's head, the rest are gradually larger, the testes of the last, killed in April, are as large each as the top of your little finger. Same in frogs; remarkable in the skate which in Winter is not half-an-ounce and in summer near half-a-pound.

I have explained to Mr Hunter, in the best manner I could, your ideas about midwifery and have the satisfaction to inform you that he is entirely of your opinion, particularly about the menses and the decidua vera. He begs leave to add to your stock of facts some which he has found by his own experiments. A cow, free of her milk, after being in case, kept from the bull, has a show of blood every month after that, and frequently external. He has observed the same in deer, bitches, monkeys, etc.

I have mentioned to Mr Hunter your wants in the Waxline and he proposes to get them all for you by the time I come back to Britain [12] Those I mentioned are a placenta, the ', , , another fœtus, twins, a glass uterine speculum(?). If I have neglected anything you mentioned to me I beg you would let me know of it. I have only seen Dr. Hunter once since I came here. I am to be with him tomorrow by ten to look over his Museum along with the Portuguese ambassador. It is a fine room and an excellent house.[13] The pictures in his back parlour cost him within a trifle of a thousand pounds at Stranze's sale. He tells me that in all his practice for these ten years he never used any instrument whatever in delivery; that he never attempts to deliver the placenta but allows it always to come away of itself, and never minds tho' the uterus close on it, for it will open again and be delivered, tho' he has seen it remain sometimes a day or two. This is always attended with some secondary pains.

John Hunter was very busy last day in making up a runaway private marriage between the son of a nobleman and the daughter of an Earl's brother. The whole is a secret yet. It is much against the will of the father of the young man, who knows, as yet, nothing of it. John [14] sent them to Scotland last Saturday night and as they had no money he had the dexterity to get hold of the money of the father of the young man and gave it to his son for a purpose of all others the most disagreable to him. It will make a great noise tomorrow or next day and you will soon see their names in the newspapers.

I thought I should be able to send you a book of Hunter's, the property of which he sold for 200 guineas and which, tho' quite printed and finished is not yet published. It is in quarto, an essay on the teeth about 150 pages in length, with about 16 copper plates but I could not persuade the bookseller.

I have wrote too long a letter but I thought many of the things would be agreable to you in consequence of which they were the more so to me. I have several others equally curious which you shall hear of again. I shall leave London tomorrow night and shall be in Paris if the wind serves, before you read this letter. I wish I could hear of you soon. A letter addressed to me to be left at the Scots College would come safe, as Pater Cummin is in Paris and desires his letters to be addressed in that manner. My best compts to Mrs. Hamilton.

I am yours

W. IRVINE.

Dr. Irvine's letter gives us a better picture of John Hunter at the height of his genius and energy than any letter we have as yet possessed, not even excepting the Jenner letters. There could not have come a more telling witness on behalf of the man whose bicentenary is being celebrated, and we owe to Dr. Louisa Hamilton a great debt for its publication.

[12] Dr. Irvine was on his way to Paris.

[13] This refers to Dr. William Hunter's House and School on Great Windmill-street. The building may be still seen on the left as one enters Shaftesbury-avenue from Piccadilly-circus. It is now used as the dressing rooms and stage of the Lyric Theatre (Peachey). William Hunter erected this building in 1768.

[14] John Hunter apparently did not give Dr. Irvine a hint of his own impending marriage. He and Anne Home were married in St. James, Piccadilly, Sunday morning, July 22nd, 1771, less than five weeks after Dr. Irvine's letter was written. The incidents related in this letter do not indicate any lack of money on John's part; yet it is said he sold the copyright of his work on the Teeth to pay the outlay involved by matrimony.

LONDON HOSPITAL SATURDAY FUND.—At a meeting of the board of delegates it was stated that there was an increase of £4665 over the previous total, and that £73,726 was available for disposal. St. Thomas's Hospital has been given a grant of £2425, the London Hospital £2185, University College Hospital £1995, and St. George's £1975.

THE THOMAS VICARY LECTURE

ON

THE HOMES OF THE HUNTERS.

BY G. C. PEACHEY.

IN his examination of Scottish intellect Buckle the historian of civilisation, after reviewing the philosophical works of Francis Hutcheson, Adam Smith, David Hume, and Thomas Reid, and the scientific labours of Joseph Black in chemistry, of James Hutton in geology, of James Watt in mechanics and of William Cullen in medicine sums up by saying: "I have now only one more name to add to this splendid catalogue of the great Scotsmen of the eighteenth century, but it is the name of a man who for comprehensive and original genius comes immediately after Adam Smith, and must be placed far above any other philosopher who Scotland has produced; I mean, of course, John Hunter." Buckle claims for Adam Smith the greater clearness and flexibility of thought. It may be so. But at the same time he places Hunter among the great masters of organic science in the same rank as Aristotle, Harvey and Bichat. Among the scientific men of outstanding intellect selected by Francis Galton to illustrate his theory of the transmission of hereditary ability may be found in the first degree the name of John Hunter, and on a lower plane those of his brother William, his nephew, Matthew Baillie, and his niece Joanna Baillie. When Lavater saw John Hunter's portrait he exclaimed: "That man is a thinker," and it must be recognised that the really great men are not the great experimenters, the great observers, the great readers nor the great scholars, but the great thinkers. It is the progress of ideas which ultimately determines the progress of the world; John Hunter not only thought himself but he set men thinking.

This week we are celebrating the bicentenary of John Hunter's birth, and I wish to address you not upon the magnificent museum on which he spent almost the whole of his earnings, nor upon his perseverance in collecting the facts on which he based his original conceptions of disease; nor shall I attempt to explain the discoveries he made, and their bearing upon modern science. But I ask you to accompany me to the various dwellings of his brother and himself and to follow their footsteps round the London of the eighteenth century. It was the London of Gay and Hogarth, of Fielding and Smollett, of Johnson and Goldsmith.

The scene opens at Long Calderwood in the county of Lanark, where during the night of Feb. 13th, 1728, John Hunter was born, the tenth child of his parents, his father being then well on in years. (Fig. 1.) We know that John, his mother's darling, was a spoiled child, that he was wayward and idle in his early youth, and that he neglected his studies at the Grammar School in favour of country amusements. The three eldest children had already died—probably of tuberculosis—three more were to fall victims to the same disease, and four only of the family of ten come into our story. They were James, William, Dorothea, later the mother of Matthew Baillie, and last of all John Hunter. That the home life at Long Calderwood was brightened with the warmth of brotherly and sisterly affection is evidenced in the correspondence which passed between them: to each other they were Jamie, and Willie and Jockie, and Nannie and Tibbie.

After their father's death, though James was the eldest surviving son and had succeeded to the small estate, William Hunter became the dominant figure, and acting as parent and teacher to each of his brothers, and his nephew and heir Matthew Baillie, he and he alone was the architect of their success in life. It was William who bore the burden and heat of the day, and in the intensity of our admiration for the genius of John Hunter it is right that William should receive his meed of honour. James the elder

on was already studying for the law, in Edinburgh, nd William, designed by his father for the ministry, matriculated at Glasgow, and studied theology there or five years. But by that time his religious opinions ad changed and meeting with the great William ullen he abandoned the Church, and for three years ractised surgery with Cullen at Hamilton. These, e afterwards said, were the happiest years of his fe, and he never spoke of Cullen without gratitude or his tuition and guidance. But William Hunter lready had larger schemes and higher ambitions, nd with the object of acquiring knowledge it was greed between himself and Cullen that he should isit Edinburgh and London before settling down to ountry practice. The first part of the programme as completed at Edinburgh, and in the winter of 740 he made his way to London by sea, and after a erilous voyage found himself under William Smellie's oof in Pall Mall.

This was William Hunter's first home in London. he house stood in one of the courts within the great ates of Carlton House, at that time in the possession f Frederick, Prince of Wales, and later the residence f the Regent. The exact position of Carlton House as the space between the present Athenæum and Jnited Services Clubs, facing Waterloo-place. It was aken down with the adjoining property in 1826 and he only remaining vestiges are its columns which ow front the National Gallery. William Hunter as particularly fortunate in his teacher, for Smellie as a remarkable man. Dr. Herbert Spencer, in his History of British Midwifery," calls him the master f British midwifery, and describes him as the greatest f British obstetricians. Without powerful friends to elp him, or the advantages of a hospital clinic, but y attending and teaching in the homes of the poor, nd by sheer devotion to his art, Smellie raised him-elf to the foremost position in his profession. But n 1740 he had just arrived in London; he was only humble apothecary and accoucheur, and had not s yet started the lectures which, though they excited

FIG. 1.

Long Calderwood, where William and John Hunter were born.

he derision of his critics, brought fame to him, and credit to his pupils.

If I read William Hunter's mind aright, he realised quickly, while he attended the courses of Frank Nicholls in anatomy and Dr. Desaguliers on natural philosophy, that he had gleaned in ten months what he could from Smellie's private tuition in midwifery and that the time had come for him to take another step forward. But there is little doubt that the instruction he had received from Smellie during those ten months laid the foundation of much of his subse-

FIG. 2.

William Hunter's Residence and School of Anatomy in Great Windmill-street, W.

quent success, while the somewhat awkward and uncouth manners of his teacher—for Smellie's hands were said to be large enough to stretch boots in Cranbourne-alley—taught him a useful lesson, by suggesting to him the cultivation of the more courtly bearing which subsequently procured for him his appointment to Queen Charlotte. Armed with an introduction to Dr. James Douglas he made his way to Red Lion-square, where he was kindly received and invited to become Douglas's anatomical assistant and tutor to his son. With Cullen's generous acquiescence the Hamilton project was abandoned, and William Hunter took up his residence in Douglas's house. London had become his darling.

James Douglas was then nearing the end of a career which had brought him distinction as an anatomist, an obstetrician, and a bibliophile. He had gathered round him a superb collection of the editions of Horace, of which he issued a printed catalogue; he had described and demonstrated Douglas's pouch; Haller eulogised him: Pope has immortalised him.

> "There all the learned shall at the labour stand,
> And Douglas lend his soft obstetric hand."

Sojourn in Smellie's house had turned William Hunter's thoughts to midwifery and the importance of what Lord Chesterfield called "the Graces" was further brought home to him by his association with Douglas. Short as this was destined to be, the effect it produced upon his character was three-fold—it gave him a love of books, a zeal for anatomy, and a choice of obstetrics as a means of future livelihood. It was with Douglas, and after his

death with his family, that William Hunter and his brother James who, abandoning the law decided to follow medicine as a profession and to join his brother in London were to find a temporary home. That winter he entered St. George's Hospital as a pupil.

The voluntary subscription hospital movement was in its youth; St. George's itself was then only seven years old. The parent institution at Westminster had opened its doors in 1719, previous to which the only general hospitals in London—indeed in the whole of England—were St. Bartholomew's in Smithfield and St. Thomas's in Southwark. The westward march of the town was extending to the fields on which the May Fair had previously been held; extensive building operations were in progress, and there was need for further hospital service and accommodation. The House of Lord Lanesborough, then recently deceased, was ideally situated, standing as it did in the field facing Hyde Park, and over its front door his Lordship's sentiments:

> "It is my delight to be
> Both in town and Country."

And in the country it actually was, for the western turnpike gate of London was then at Clarges-street, though 50 years before, when Burlington House was built, its noble owner, when asked why he had erected his home so far out of town, replied that he was determined to have no buildings beyond him. So rapid had been the progress westward. From the windows of the hospital facing north little was visible but open country; just inside the park palings might have been seen the mound erected by Oliver Cromwell for the defence of London—on which the so-called Achilles statue now stands, and on the right, across Tyburn-lane, another known as Oliver's Mount from which Mount-street gets its name. Looking towards what is now Albert Gate might have been observed a small domed-brick building. It was known as the St. James Conduit House, and may be seen within the park railings opposite the Alexandra Hotel.

In 1736 the governors of the hospital purchased the freehold for £500, and a picture by Richard Wilson shows the hospital as it was when William Hunter entered it as a surgical pupil in 1741. It remained practically unaltered during the whole of that century while John Hunter was the chief ornament upon its staff, until, in 1824, it was rebuilt, when its front was turned towards the east. On its western side is to be seen "The Cottage," still so-called, which was John Hunter's home for a while, and continues to furnish quarters for the resident staff. The humble dwelling of the dairyman who supplied milk for the patients is seen in the picture to stand on the roadside, and the turret of Chelsea Hospital may be discovered in the distance. For Grosvenor-place was then a country lane, leading to Westminster and the Five Fields, now Belgravia.

Scarcely had the winter session opened in October, 1741, when the news came to William Hunter of his father's death, to be followed six months later by that of James Douglas, his patron and employer. It must have been a heavy blow. He had burned his boats in Scotland, his elder brother James had forsaken the law and joined him in London; the burden of responsibility for the whole family was upon him. "'Tis in vain," he wrote to his mother, "to say that neither Jamie or I is the loser by Dr. Douglas's death, but we are in a very good way." But he had courage and confidence in himself. Already he had formulated schemes for the future and had determined to become a teacher of anatomy himself, when he should have acquired sufficient knowledge and such a collection of preparations—then necessary for teaching—as would ensure him success. That winter William Hunter visited Paris, and attended a course of lectures on anatomy, but during his absence his brother James, broken in health by his assiduous attendance in the dissecting room, had returned to his Scottish home, to die of hæmoptysis.

Of the family of ten children four only now r mained, and the expectation of life of the survivo was not promising. Again William Hunter foun himself alone in London; he had succeeded on h elder brother's death to the small estate, but h mother, his two sisters, and his brother John we entirely dependent upon him. He was in his twenty eighth year. But events were moving forwar towards the launching of his long-contemplate scheme; the dissolution of the United Company Barbers and Surgeons and the abrogation of th bylaw prohibiting the dissection of the human bod outside their hall afforded him a favourable oppo tunity, and in October, 1746, he announced in th newspapers the commencement of his first course lectures on anatomy. There were many others in th field before him; it was to be an uphill journey, b never was perseverance better personified than i the two brothers, William and John Hunter. Th chosen venue was the Little Piazza, Covent Garde the selection of which by him and other teachers w due to its central position. Covent Garden, once fashionable quarter, was no longer in favour wit society which was now flocking to the squares ar Mayfair, and the purlieus of Old Drury and the ne Covent Garden Theatre were given over to anatomist actors, "starving poets," and men of letters. Ar now William's only surviving brother, John, tired an idle country life, and hearing much of William success, wrote offering to become his assistant, or that proposal were not accepted expressing a desi to go into the Army. The offer was well receive and John set off on horseback for London. He w in his twenty-first year. On arrival he doubtle joined his brother, who was then residing Mrs. Douglas's house in Hatton-garden, and for t next 12 months this was probably John Hunte home. During that period he was initiated into t art of dissecting and proved himself so efficient th he was soon able to instruct his brother's pupils.

In the summer he went to Chelsea Hospital learn surgery at the feet of Cheselden, the gre surgeon of the time, returning in the winter to t dissecting room in Covent Garden, and when Cheseld succumbed to a stroke of paralysis John Hunt continued his studies as a surgical pupil at St. Barth lomew's Hospital. But William Hunter's priva practice was growing with his reputation. For a fe months he deputised as a surgeon man-midwife at t Middlesex Hospital, then recently established serve the district of St. Giles, until on the openi of the Hospital for Lying-in-Women in Brownlo street, Holborn, in 1749, he was elected to its sta From his subsequent movements it appears to r that William Hunter had grasped the importance the principle that, for the safety of the women attended, his practice should not be conducted fr premises which served at the same time for dissectin and we find that he immediately took over a lar house in the Great Piazza, Covent Garden, whi henceforth became the residence of himself, his broth John, and their pupils. At the same time he retain the apartments in the Little Piazza for anatomi purposes. This was in the autumn of 1749, almo one hundred years before Semelweiss, in 1847, was l to attribute puerperal fever to the carriage of sep from the attendant to the patients.

In 1753, at the age of 25, while still in his pupilag and after only five years of study, we find that Jo Hunter was elected a master of anatomy at Surgeon Hall in company with Percivall Pott, over the hea of many of his seniors. No higher tribute could ha been paid to his knowledge of anatomy. He h evidently made up his mind to follow surgery as l profession. In 1754 he entered as a surgical pu at St. George's Hospital, and again in 1756 for second course. The intervening summer is account for by his entry as a gentleman commoner St. Mary's Hall, Oxford. That he did not go there his own inclination is certain from his later rema "They wanted to make an old woman of me or th I should stuff Latin and Greek at the Universit

ut these schemes I cracked like so many vermin s they came before me." The simile was apt if npolished. In after years we find him writing in esponse to his irritating and venomous critic :— Jesse Foot accuses me of not understanding the ead languages, but I could teach him that on the ead body which he never knew in any language ead or living." Foot's detraction was probably ue—there is generally a strand of truth in the bric of his hatred—but John Hunter was certainly ght : as regards anatomical knowledge comparison etween them would be fatuous.

John Hunter's choice of St. George's as his finishing chool was of good purpose. At the chartered hospitals sailed for Belleisle, and there and in Portugal he served for a little more than two years.

Six letters from him to his brother have been preserved, and, characteristic of his temperament as they are, I am tempted to quote extracts from them. He was a bad sailor. " The sea plays the devil with me," he wrote, explaining his preference for land service ; which by the way, at the same time, offered chances of better pay. Again he says, " Thank God I have succeeded in everything I have attempted, but my practice in gunshot wounds has been in a great measure different from all others, so that I have had the eyes of all the surgeons upon me, both on account of my supposed knowledge and method of treatment.

FIG. 3.

Earl's Court House : John Hunter's residence from 1765 to 1793.

ve years of apprenticeship to one of the surgeons as then necessary—it remained so till within living emory—whereas at St. George's there were no estrictions : the appointments were open, subject votes and influence alone. Whatever the evils of he system, and they were many, without it surgery ould not have had its John Hunter. In 1756 he as appointed resident house surgeon at St. George's, stepping-stone to the staff, but he only retained the ffice for five months, anxious as he was to return to he dissecting room and complete the researches upon hich he was engaged. The same year William Hunter oved to Jermyn-street, then a favourite medical uarter, gave up the apartment in the Little Piazza, nd henceforth the house in the Great Piazza served s a residence for John and the pupils, and as the chool of anatomy. In that house John Hunter ntinued his anatomical researches until, in the mmer, he contracted pneumonia. He had comleted 11 years in the dissecting room, and it was vident that he could go on no longer. With the mily history before him, the warning was too efinite to be passed over. Immediate and prolonged hange of occupation was necessary. The period of nvalescence was spent in the country, probably at arl's Court, then a hamlet two miles from London, aried by occasional visits to town, until having pplied for and obtained a commission as a surgeon n the staff of the Army, in the spring of 1761 he My fellow creatures of the hospital are a damned disagreeable set." John Hunter was not altogether an easy person to get on with ; neither he nor his brother could endure opposition ; they quarrelled with others, and eventually quarrelled between themselves.

Before he left England John Hunter had become a subscriber to St. George's, and there at a board meeting we first meet with him after his return. There is little doubt I think that he was then living in lodgings in Russell-street, Covent Garden, in the house of William Jones, the druggist, and that apart from his own dissections and researches he filled in his time by entering into some sort of professional association with Spence, the dentist, in Soho-square. But two years after his return to England he purchased the lease of three pieces of ground at Earl's Court, on which he proceeded to build a residence, and nine months later he became the occupier of a house in Golden-square.

Now we return to William Hunter. Long before his attendance in 1762 upon Queen Charlotte at the birth of a son, afterwards George IV., William Hunter having acquired a competency for himself and finding that his wealth continued to accumulate—he had already spent from £3000 to £4000 on his library—resolved to give up teaching anatomy. He vacated the Covent Garden premises, but yielding to the pressing calls of his pupils to continue his lectures,

in pursuance of a design he had in contemplation, he presented a memorial to Lord Bute, praying for a grant of land from the Crown on which he proposed to lay out £7000 in building a museum of anatomy and to present it to the nation. After long delay the offer failed of acceptance. Had it materialised the name of Scotland Yard, the chosen site, would have been associated in the public mind with the investigation of disease instead of crime. He took temporary premises in Litchfield-street, Soho, where his lectures were carried on until, foiled in his original design, he purchased a house in Great Windmill-street and commenced to build a theatre for himself. There from 1768 to his death in 1783 William Hunter, with a succession of distinguished assistants, Hewson, Cruikshank, and Sheldon, continued his courses of anatomy; after his decease the property passed to his nephew and heir, Matthew Baillie, until, in 1831, its doors were finally closed.

Of all the homes of William Hunter a part of this alone remains. The Little Piazza has long disappeared, the house in the Great Piazza was demolished and rebuilt about 50 years ago, the site of his Jermyn-street residence is now occupied by Prince's Hotel, and the Litchfield-street premises have been swallowed up by changing London. The red wall in Great Windmill-street, now the back of the Lyric Theatre, is the actual frontage of the old house. The front portico has gone, the area remains, and behind the railings may be seen the basement windows. Through the side entrance to the north the actors and actresses now pass to their dressing-rooms above, and a flight of steps is seen down which many a resurrectionist must have staggered under his ghastly burden. A few days ago I stood upon the stage of the theatre which is sunk below the level of the street, and which formed the actual floor of William Hunter's School of Anatomy.

When William Hunter vacated Jermyn-street in 1768 he handed over the remainder of the lease to his brother, and John Hunter with William's support was elected surgeon to St. George's Hospital. "When I solicited to be appointed one of the surgeons," he wrote, "it was not with a view to augment my income, either immediately by the profits of the hospital, or in a secondary way by increasing my practice, but to acquire opportunities of extending my knowledge that I might be more useful to mankind, not only by improving my private practice, but if I should be enabled to make discoveries even in the art itself." So did he write in 1793 in a letter to the governors. The appointment yielded him what he desired, attendance upon the living and examination of the dead; and, moreover, it enabled him to take

FIG. 4.

John Hunter's wife, *née* Anne Home. From the original by Masquerier.

pupils, one of the earliest and certainly the greatest of whom was Edward Jenner.

John Hunter's association with Jenner must have been a constant delight to each of them, and though we know little or nothing of the incidents of the two years of their companionship in Jermyn-street, a series of letters remains, wherein it is possible to trace the objects of Hunter's pursuits, the progress of many of his experiments and researches, in some measure the evolution of his thoughts and ideas. These letters bear testimony to the friendship which existed between them. The exact date of the termination of Jenner's residence in Jermyn-street is conjectural; he may or may not have been there in July, 1771, when one Saturday evening, John Hunter wrote a letter to William: "Dear Brother, — To-morrow morning at eight o'clock and at St. James Church enter into the Holy State of Matrimony. As that is a ceremony which you are not particularly fond of, I will not make a point of having your company there. I propose going out of Town for a few days when I come to Town I shall call upon you. Married or not married, ever yours, John Hunter. Sunday morning at eight o'clock! The honeymoon was probably spent at Earl's Court, and the expenses of the wedding are said to have been provided by the sale of his tooth upon the Teeth. (Fig. 3.)

From his marriage onward he made good use of Earl's Court. "For two or three months in each year," he wrote in 1775, "I am pretty much in the country, making experiments upon animals and vegetables"; sleeping there, coming to town in the morning, and returning to dinner. Around the house at Earl's Court, until its demolition in 1886, there lingered a halo of romance, the romance of John Hunter's otherwise turbulent life. It was there his honeymoon was spent, it was thither he fled from the town to his family, his fields, his trees, his ponds, and his animals. (Fig. 4.) Mrs. Hunter's apartments were upstairs, set apart from the lower regions where his study looked eastwards on the meadows beyond, so that he could keep a watchful eye on the "Den" where the wild beasts were kept. Round the house ran a cloister in which he kept the smaller animals used for his experiments, the entrance to which was by a subterranean passage and through which, in Frank Buckland's words, "Master John could wheel a tiny sized cart or truck and drag into his den anything from a Giant's body to a good-sized whale." This burrow opened not far from the stables, and Hunter could easily whip anything into the stable yard, down the burrow and into the area without Mrs. Hunter knowing anything about it. "I'll be bound," added Buckland,

remembering I am sure his own very similar domestic position, "I'll be bound to say, she used occasionally to lead him a life, and kick up a row if any preparation with an extra effluvium about it was left on the dissecting table"; and then calling upon his imagination Buckland pictures "The great John with his bright intelligent eyes, expressive eyebrows, and white hair curled behind, with his hands in his pockets, smiling his satirical smile" and saying, in allusion to Buckland's friendly offices, "So, Master Frank, there you are again; you found my remains in the vaults of St. Martin-in-the-Fields, and got me buried in Westminster Abbey, and now I find you actually in my house investigating my private skeleton-making copper?" In this copper was boiled the body of the giant O'Brien, whose skeleton is now in this museum. It is said that O'Brien had expressed an earnest desire to be buried at sea, but John Hunter had other intentions. At great expense the body was removed by night in a hackney coach, and having been carried through several streets, was transferred to Hunter's carriage and conveyed to Earl's Court. There the gruesome work was completed in the copper. It is said to have cost him £500.

All John Hunter's animals, like their master, were devoted to science; his pigs were fed with madder till their bones were red; the spurs of his cocks were transplanted into their combs; his ducks were fed on sprats till they tasted of fish; his pigeons, turkeys, geese, eagles, owls, hawks, and his ostrich were used for all sorts of experiments. Wolves, jackals, and dogs; donkeys, mules, zebras, horses, and cattle were all mated where possible, and produced curious hybrids. In the middle of the field at the back was a pond, mentioned in the original conveyance of the property as the "Great Hole," in which John Hunter cultivated pearls from mussels, and where he kept his fish, frogs, leeches, and eels. In one corner was a mound, in the western face of which was a passage leading to three vaults, where he kept the dangerous animals.

Tales are told of his perilous encounter with a young bull, in wrestling with which he was thrown down, and of an occasion on which he found himself in a melee between two leopards, which had got loose, and several dogs. Unarmed he instantly laid hold of both the leopards, which fortunately submitted to be led back to the den and secured. And all around the grounds were the trees, which were stripped of their bark and bored with holes, in which he placed his thermometers, in order to carry out his experimental researches into the heat of vegetables.

The letters to Jenner who had settled in country practice at Berkeley, whence in the after years he was to issue his immortal "Inquiry into the Variolæ Vaccinæ," are full of allusions to Hunter's experiments. He keeps on asking for information as to the habits of the cuckoo and the breeding of toads. "If you collect eggs you should also collect the nests: I want a crow's nest, also a magpie's in the branches where they are built. I want a nest with the cuckoo's eggs in it, also one with a young cuckoo, also an old cuckoo. I hear you say there is no end of your wants." Again, "I thank you for your experiment on the hedgehog, try its heat and let me know the result. You do not mention a word about bats: Have you got the bones yet of a large porpoise? Is ever the salmon spawn seen after she has parted with it? I will take any specimens of fossils you may send me, or indeed anything else. What do you think of examining eels? Their sexes have not yet been found out, nor their mode of propagation." In the spring of 1778 he was asking for more hedgehogs: "All that you sent me have died, so that I am hedgehog-less." And then in one letter, after acknowledging the receipt of a consignment of various objects, he adds: "I was told the other day you was married and to a young lady, with considerable fortune. I hope it is true. What has become of your paper on Lead in Cider?" Jenner's reply is explained by Hunter's subsequent letter: "I was at a loss to account for your silence, and I was sorry at the cause. I was glad when I heard you was married to a woman of fortune; but let her go, never mind her. I shall employ you with hedgehogs."

FIG. 5.

Lady Campbell, John Hunter's Daughter. By Masquerier or Zoffany.

I might continue almost indefinitely, for there is nothing that presents to us so truly John Hunter in his habit as he lived as these letters to Jenner.

At least during the summer months he used Earl's Court as a residence. When in London from six in the morning, or even earlier, until nine he was in the dissecting room; after breakfast he saw patients at his house, before going his round of visits. He dined at four, after which he slept for about an hour, and when not lecturing he dictated to Bell, his amanuensis, till one or two in the morning, leaving only four hours for sleep. The story goes that his friend Maxwell Garthshore dropping in one morning and finding him very busy remarked, "Ah, John, you are always at work." "I am," was the reply, "and when I am dead you will not soon meet with another John Hunter."

In 1770 he began to lecture privately to his pupils, and in 1775 the first public announcement of his lectures on the Principles and Practice of Surgery appeared in the newspapers. The two following years they were delivered at his brother's anatomical theatre in Great Windmill-street, but in 1778, at No. 28 in the Haymarket, then the picture gallery of Mr. Greenwood, and now the Haymarket Stores. These

lectures were continued with the assistance of Everard Home until the end came. There is considerable difference of opinion as to the number of the pupils who attended. Foot had heard that at some courses there were nearly 50; that in 1786 there were only 12, and in 1788, 18. There is a story that at one course there was only one pupil present, and that in order to be able to begin his address with the word "Gentlemen," Hunter ordered the attendant to bring in the skeleton. No authority is forthcoming for this tale, but all the evidence goes to show that Hunter's genius was unrecognised by his contemporaries.

William Hunter, who had provided each of his brothers with their start in life, who had given to John the opportunity of developing his talents in anatomy, and whose interest doubtless secured for him his Service commission, was no easy master. He had met with opposition to his claims of discovery, and after John's return from abroad the way of the brothers lay apart, though they remained friendly. In 1768 William's influence had procured John's election to St. George's. They were on brotherly terms at the time of John's marriage in 1771, and their relations were manifestly unbroken in 1777, when John was permitted to use the anatomical theatre in Great Windmill-street for his lectures. Before another year had passed some disagreement had occurred between them. I will not weary you with details of the quarrel; suffice it to say that it was the parting of their ways. The estrangement lasted to the end, and though John was permitted to render surgical aid during William's last illness, it is evident that he was not forgiven, for his name was not so much as mentioned in William's will, and everything, even Long Calderwood, was left to others.

Struck down by paralysis, as he was nearing his end William Hunter found words to say: "If I had strength enough to hold a pen I would write how easy and pleasant a thing it is to die." But in spite of the even placidity of the words, they carry with them a sense of disappointment, and of a readiness to depart.

> "Life was bitter. All the faces of the years,
> Young and old, were gray with travail and with tears."

Undoubtedly there was deep feeling on both sides; after their quarrel William had written to his sister, Mrs. Baillie, "I have lived to have my affections much disturbed by ingratitude"; and John, on reminding his pupils of the loss which anatomy has sustained by his brother's death, was obliged to pause and turn his face away, overcome by emotion.

I cannot omit a passing mention of William Cullen, without whose fostering care and interest anatomy would not have found a William Hunter, in the same way that without William Hunter's fatherly protection we should not be assembled here to-day to honour the memory of his brother. On William's death John knew that any worldly expectations he may have entertained were unfulfilled. The lease of the Jermyn-street residence was running out; his museum, the darling object of his life and dreams, required better accommodation, and he decided to purchase the lease of the Leicester-square house and of the premises behind it, which ran through to Castle-street. On the ground between the two he built a lecture theatre and conversazione room, and above them a museum and gallery. He is said to have spent £6000 on the lease and the building. The house in Castle-street provided quarters for his assistants, dissecting and preparation rooms, a printing press, and offices. It was there that his later works were printed.

In William Clift's MS. diary, which found its way in a mysterious manner to Sierra Leone and was rescued from a heap of rubbish, is a plan of John Hunter's house in Leicester Fields. Therefrom we learn the arrangement of the various rooms even to their furniture. On one side of the ground floor was Hunter's study, and on the other his afternoon bedroom. Could we peep into that study in the evening we should see Clift, sitting there from 7 to 11, or even later, copying into the volumes, from dictation, the slips of paper on which Hunter had jotted down his wandering thoughts. There would be the cabinets which contained them; there the s bed which Hunter occasionally used when sudde attacked by angina. In the year before Hunt death his household, there and at Earl's Co numbered 45 persons, including his wife, his son, his daughter.

John Hunter had been appointed Surgeon Ex ordinary to the King, honours were showered u him, and the death of Percivall Pott left him witl a rival in his profession. But two troubles beset I In the first place his health had given way; for s years he had been subject to attacks of gout in feet, and in 1773 he had experienced a strange forn spasm which alarmed both him and his med attendants; it was his first warning of the dis which 20 years later was to strike him down. 1777 he had a second serious attack which lasted days, and, visiting Bath, Jenner went over and him there, and diagnosed the true nature of malady. Henceforward John Hunter lived in const fear of death, recognising the responsibilities which upon him for the support of a family totally unprovi for. He was earning as much as £5000 a year, he saved nothing; everything over and above establishment expenses, which were very lavish, purchase of the Earl's Court freehold, and the l and building of the house in Leicester-square, swallowed up by his museum. The realisation of responsibilities, aggravated by disease, made irritable and impatient of opposition; an unfortu characteristic of both his brother and himself w resulted in their quarrel.

The relations between him and his colleague St. George's, never good, had gradually become wo until they burst out into active and bitter opposit In professional knowledge and in mental capa none of his colleagues on the staff was capable comparison with him. Moreover, while owning hin a pigmy in knowledge, he felt as a giant compa with them, and he despised their apathy and lac enthusiasm in the instruction of the pupils. In endeavour to induce them to share with him lectures, which he considered necessary, he was on every occasion with excuses. One of his colleag said he did not choose to lose any reputation might have in surgery by giving lectures, and ano confessed that he could not see where the art coul improved. In despair of inducing them to bear t share in the instruction of the hospital pupils, informed them that in future he would keep himself the fees of those students who entered u him, this being in direct opposition to the l established custom that all the fees should be div between the four surgeons. The Committee appoi to consider the matter at issue, without consul Hunter, accepted the advice of his three oppone and presented their findings to the board of goverr who thereupon decided against Hunter. Discourt though their treatment of him, he bowed to author "If the proposals meet with the approbation of Governors," he wrote, "it is my business as a ser of the charity to do the duty of my situation."

The curtain rises on the final scene. At a we board meeting on Oct. 16th, 1793, the question a as to the propriety of the admission of two pu who were not provided with the requisite certifica Hunter spoke in their favour, and in the course o remarks made some observation which one of colleagues thought fit flatly to contradict. Hu immediately ceased speaking, retired from the ta and struggling to suppress the tumult of his pass hurried into the adjoining room which he had scar reached when, with a deep groan, he fell lifeless the arms of one of the physicians who chanced t present. At the next meeting of the board mention was made of the tragedy; there was no of condolence. The absence of any official expres of sorrow connotes the bitterness of the hostility he provoked. Such was the passing of John Hur It was suggested in the public press that his st should be placed in St. Paul's by the side of Sar Johnson, Sir Joshua Reynolds, and John How

it in the event he was buried in the vaults of St. artin-in-the-Fields attended by his relations and me of his oldest medical friends. No memorial was ected to his memory until, in 1859, Frank Buckland, ter a tedious and prolonged search for his coffin, as instrumental in procuring for Hunter a last sting place in Westminster Abbey.

His personal property was dispersed ; Earl's Court as sold, and after his debts had been paid a balance some £1500 alone remained. The following year a tition was presented to Parliament praying that the ouse should make such allowance for the collections , upon inquiry, should be thought fit ; when Pitt reported to have said : " What, buy preparations, have not money enough to purchase gunpowder." vo years later a committee was appointed to examine d report as to the character of the collections, their vantages to education, their original cost, and the esent condition and probable duration and preserva- on of the preparations. In the course of the inquiry was elicited that they had cost John Hunter above 0,000 and near 40 years' labour, and Sir William izard gave it as his opinion that " every article bears e stamp of the finger directed by the judgment of a an superior, I believe, to anyone that ever existed a point of practical anatomy." In 1799 the llections were purchased for £15,000 for the use of e public ; the following year they were entrusted to e keeping of the College of Surgeons, and in 1806 ey were moved from Castle-street to Lincoln's Inn elds.

I have but few more words to say. In the brilliant nshine of modern surgical progress, begun by mpson with the introduction of chloroform anæs- esia, and culminating in the magnificent triumph of ster, our eyes are apt to be blinded to the debt we ve to the perseverance and the genius of John unter.

" If you seek his Monument, look around ! "

FESTIVAL DINNERS.

I.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

THE Festival Dinner was held in the College on e evening of Tuesday, Feb. 14th, Sir Berkeley ynihan, supported by the Vice-Presidents and a jority of the Council of the College, presiding er a large company of guests.

After the loyal toasts the company drank in silence the memory of John Hunter. The President then ve the toast of the guests, and, in reference to the gh standing in divinity, literature, art, and law hich some of those guests enjoyed, proceeded to int out that science was the only thing that had vanced during the 200 years that had elapsed ce the birth of John Hunter. In painting, in lpture, and in architecture, as in literature, imme- ate interests had influenced popular taste, but the sults, he thought, would not elicit the profound verence paid to the work of those who lived cen- ries ago. But whatever else was subject to change opinion the union of hosts and guests at feasts s, is, and will be a perpetual feature in society, d the President liked to think of the company that ght have assembled in that hall 200 years ago at festival dinner, if such had been possible. Cheselden d Douglas of " pouch " fame might have been ong the hosts, and John Locke, the philosopher, ter King (Lord Chancellor, as Baron Ockham), his n ancestor, Bishop Berkeley, and Alexander Pope ght have been among the guests, although Dr. ead had put Pope on a diet of asses' milk. While upling the toast with the names of Lord Birkenhead d Dean Inge, he alluded with great feeling to the esence of one other guest, a faithful friend and vant of the College for 50 years, Sir Frederic allett.

The Earl of Birkenhead, who professed profound admiration for surgery without any desire to make close acquaintance with individual surgeons, showed his admiration by being humorously severe on the position which, it seemed to him, was being taken up by modern surgery. Pointing to the claims, always admitted, on behalf of John Hunter, that he had introduced scientific surgery to the world, Lord Birkenhead wondered what the estimate of the successors of the surgeons of to-day would be when it was expressed 200 years later. Those successors might come to the conclusion that, while their own science was perfect, scientific surgery had only begun to-day, nothing before that date counting, and conclusions of that sort implied that during successive periods surgeons had not realised their own defects, nor, which was more surprising, each other's defects, being always of opinion that they were exercising with perfect skill their highly specialised calling. Lord Birkenhead concluded by pointing out that the building in which they were being entertained had gay associations, for it stood on the site of the house of Lord Rochester of frivolous fame, as well as of the old Globe Theatre.

The Dean of St. Paul's, in response, said that he envied the opportunities enjoyed by the modern surgeon for understanding the cases of their patients, and found that in comparison with the surgeon the clergyman was very badly equipped. He wished that it were possible for the clergyman to obtain X rays of the consciences of his patients, so that such offences as the employment of bad language at golf, the making of fraudulent returns for super-tax, and the shooting of foxes could be diagnosed, when the appropriate fines—say payments to the Chancellor of the Exchequer—could be enjoined. He paid a high tribute not only to the skill but to the extreme generosity of surgeons, by pointing out that he had close, though not personal, experience of the virtues to which he was testifying.

The toast of the Hunterian orator was proposed by Sir George Newman, who said that in asking the company to drink to the health of Sir Holburt Waring, the Hunterian orator, he did so with particular pleasure, because he knew how entirely Waring's ideals were associated with the purpose of the Hunterian oration—namely, to keep immortal the memory of John Hunter. A former President of the College, Sir Jonathan Hutchinson, had defined immortality in medicine as the keeping intact by successive links the chain of a great personality ; others had given the claim of immortality to those who engendered seminal ideas, whose seed would be fruitful from generation to generation. Hunter's association of physiology with surgery, as exemplified in the work of Jonathan Hutchinson and of another late President of the College, Sir John Bland-Sutton, was an example of seminal ideas, and a great participant in those ideas was Sir Holburt Waring, as had been made clear by the terms of the Hunterian Oration which they had heard that afternoon.

Sir Holburt Waring, in a brief reply, made no claim for arrival at a perfected surgery such as had been criticised, but repeated the significant expression contained in his Oration that great developments in therapeutics might be expected from biochemistry.

II.

HUNTERIAN SOCIETY.

THIS Society held a festival banquet on Feb. 9th to celebrate the bicentenary of John Hunter's birth. Mr. A. Mortimer Woolf, the President, occupied the chair, and among the guests were the Lord Mayor of London and Lady Mayoress, the High Commissioner for India, the Presidents of the kindred medical societies, and Miss Hunter-Baillie, the last survivor of Hunter's line and his great grandniece. The menu-card was designed and executed by Mr. Thornton

Shiells, the well-known pathological artist, who presented the original to the Society in the course of the evening. It contained Reynolds's famous "snapshot" portrait of Hunter, framed in laurels, with a view of the old home at Long Calderwood above it and one of the Earl's Court "menagerie" below. On either side were drawings recalling some of Hunter's classical experiments, and on the back was the device of a hedgehog. Models of the hedgehog and of the glass jar containing a hen's head with a cock's comb were cunningly executed in ice and exhibited by the chef.

After the loyal toasts had been honoured, Sir Arthur Keith was invited to express his opinion of the menu, and taking its design as his text he related many interesting details of Hunter's life. He pointed out the window of the room where the great man had been born, and the "corbie steps" from which he must have mounted when he rode to London, accompanied by his friend Hamilton. Sir Arthur Keith spoke of his delight at the discovery of the Hamilton-Hunter letters, and mentioned that Dr. Louisa Hamilton had the letters with her in the room, but that he would shoot anybody who tried to get possession of them! He regretted the omission, in the sketch of the house at Earl's Court, of the flock of 15 geese which Hunter had kept to supply him with eggs of a convenient size for his embryological studies. This house had been Hunter's "week-end cottage"—a week-end cottage of forty rooms being no new thing apparently—and the greatest experimental garden in Europe. After his death it had been a gambling den, but had been reclaimed to medicine as a mental hospital.

In proposing "The Hunterian Society," Sir Douglas Hogg, the Attorney-General, drew an eloquent and witty parallel between the duties and aims of the law and medicine which, with the Church, he called the three great healing professions. Congratulating the Society on its international scope, he pointed out that Hunter, through his pupils, had been the founder of scientific medicine in the United States. Between the speeches an unusual feature was community singing, led by Mr. J. Batten, who, as Mr. Mortimer Woolf pointed out in replying to the toast, would in the days of the barber surgeons have been rewarded with a shoulder of mutton and two rabbits.

Mr. W. E. Tanner, secretary of the Society, in proposing "The Lord Mayor and Corporation of the City of London," expressed the Society's gratitude to Sir Charles Batho for identifying himself with their aims. Their association with the City had been a vital factor in their success in carrying on a profitable interchange of ideas with other professions. Sir Charles Batho, in reply, explained that he and Lady Batho had set their hearts on doing all they possibly could for the hospitals of London. "The Guests and Kindred Societies" was proposed by Dr. W. Langdon Brown, and answered by Earl Russell, Sir John Rose Bradford, and Sir Ernest Wild. Sir John Rose Bradford compared Hunter with Harvey, the one a spring and the other a reservoir of science, and referred to Hunter's part in founding the great English schools of medicine. Sir Ernest Wild compared him with John Howard, who had taught the world that even criminals were human, while Hunter had taught it that even surgeons could be humane.

DEATH OF COLONEL CATHCART GARNER, C.M.G., C.B.E.—Colonel Garner, whose death took place at Southsea on Feb. 4th, was born at Dumfries, the son of William Hastings Garner, F.R.C.S., and was educated at St. Columba and Trinity College, Dublin. He graduated in medicine in 1885, entering the Army Medical Department in the following year. He was seconded for service in Egypt, and became deputy director-general of public health administration in Cairo. He rejoined the army at the outbreak of the war, and served in Gallipoli and Egypt, finally becoming assistant director of medical services in Palestine. His decorations were many, including an officership of the Legion of Honour and a Knighthood of Grace of the Order of St. John. His published work chiefly dealt with local epidemics of infectious disease.

Special Articles.

SCOTLAND.

(FROM OUR OWN CORRESPONDENT.)

The Galashiels Enteric Outbreak.

THE enteric epidemic in Galashiels, a town of so 17,000 inhabitants, began early in January. T cases now number about 100, but the peak is pass and it is reported that the incidence has fallen one case a day. The origin has not yet been det mined, but investigation in detail is proceedi The type is para-B. Whether milk or water ultimately found to be the origin, the outbreak l all the features of a sudden, temporary infection o common medium; for the cases, at the moment, sh a random incidence over the town. In the admir trative stress of accommodating the abnorn numbers detailed investigation takes time. A medi officer of the Scottish Board of Health is in da touch with the medical officer of health, and it m be assumed that no source of probable infection v be left uninvestigated.

Edinburgh Royal Maternity.

In 1927 the intern cases numbered 2094, ext 474, Leith Branch 549, total 3117. This is almost t same as in 1926. The antenatal and postnatal clin show 10,002 visits as against 7395 in 1926. It gratifying to see that the excellent "John Willi Ballantyne Annexe" is so much appreciated. An natal work will soon be a very substantial section the "Simpson's" activities. One wonders more a more why poor Ballantyne had such an uphill fi for some 25 years to secure an effective beginni Everyone wishes the voluntary hospitals well, but t proper expansion is slow. All the greater credit to Nasmyth, for under his generous chairmanship relative pace has increased enormously.

Edinburgh Royal Infirmary.

The pressure on bed accommodation continues such an extent that expansion is urgent. In 1927 number of in-patients was 18,713; of out-patien 61,582. This means an increase of 1689 in-patie Yet, at the end of the year, the waiting-list stood 1995, of which 1203 were surgical. Obviously policy of "coöperation" sketched out more than o by the Secretary of State for Scotland and m explicit in his recent interview with the Brit Hospitals Association, has something very substan to rest upon at the "voluntary" end. The cost bed for 1927 was £155 12*s.* 9*d.*, an increase of £12 This is largely due to the new Radiological Departme which may require separate accounting arrangeme This department is gaining steadily and rapidly favour, as was to be expected. It is interesting, t to note that for the 55 children in hospital, "Certi Milk" was provided at a cost of £450 per annu Four dental surgeons have been added to the staf a wavelet, no doubt, from the rising tide of "den benefit" and dental demand generally. Donati from health insurance approved societies amounted £5948. This is good as far as it goes; but why, a 16 years, the approved societies should remain miserly in their donations is a mystery, when it is v known that, like every other large hospital, the Ro does a very great deal among "insured persons." looks as if little may be expected so long as the pres failure of societies to "pool" or coöperate continu

Voluntary Insurance.

In Scotland, as in England, the contributory sche of old-age pensions at 65 has stimulated "volunt insurance" under the National Health Insurance A "Old age" is a "certainty," in most minds; sickn and death before 65 is, in the same class of mind, o a "risk" and transient. Whatever the psycholo

oluntary insurance in the pre-pension days was a lative failure ; even at present it is a small factor in large scheme ; but it is a symptom of the immense terest provoked by the scheme, which, however, ecessarily leaves many gaps. Recently Mr. Stirling, member of the Scottish Board of Health, xpounded to the Incorporated Accountants' Students' ociety the whole pensions insurance scheme and the lvantages of voluntary insurance. He envisaged at, with the passing of the years, National Insurance ould become more and more an accepted and normal ature of our social system, and that professional orkers would, on ceasing to be compulsorily insured, ect to remain within the scheme as voluntary ntributors.

The Lord Provost's fund for the building and endowent of the new Royal Infirmary has almost reached 84,000 of the £400,000 asked for.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

Some Paris Health Statistics.

FRANCE occupies an unenviable position in interational tables of birth- and death-rates. As a French riter has put it : " One is born there less frequently id one dies there more frequently than in many her countries comparable in other respects." It is easant, therefore, to find that the health record of aris is, on the whole, good, being considerably above at of the country as a whole. This is all the more rprising in view of the overcrowding which exists certain quarters of the capital, but there is no ubt that Parisians benefit very largely from the entiful supply of parks, gardens, and open spaces hich " la ville lumière " possesses, and that this utralises to some extent the bad housing conditions. he death-rate in Paris in 1925 was 14·7 per 1000 opulation, compared with 18·1 per 1000 for the rest France. This is a great improvement on previous gures ; in 1912 the Paris death-rate was 16·3, and 1900 19·6. The birth-rate in 1925 was 16·2 per 1000, most the same as in 1912, although the general rth-rate has fallen considerably. Compared with her European cities, Paris has a higher death-rate an London, Brussels, Amsterdam, or Vienna, but a wer one than Budapest, Madrid, and Milan. Its rth-rate is higher than that of Brussels, Vienna, and dapest, and about equal to that of Milan. An alysis of the causes of death shows a decrease in ost diseases since 1900. Deaths from cancer have creased, and those from diseases of the heart and dneys remain about the same. The death-rate for phoid fever has fallen from 0·35 per 1000 in 1900 0·04 in 1922, for pulmonary phthisis from 3·83 to 37, for respiratory diseases from 3·50 to 2·41, and r infantile diarrhœa from 0·96 to 0·31. Deaths from olence (including suicide) have fallen from 0·64 to 28 per 1000 population, so perhaps the Paris apaches e a dying race, but it is curious to reflect that many ore people die from violence than they do from easles or diphtheria (both 0·05 per 1000). Has the olent Paris taxicab anything to do with this ? fant mortality in Paris is lower than in Brussels, d about the same as that for France as a whole ·7 per cent.), but this figure is nothing to boast out.

The direct influence of open spaces on the death-te is seen in a comparison of the different arron-ssements. The Invalides (VII^{e}) has a death-rate 7·7 per 1000, the Champs Elysées (VIII^{e}) 6·8, the rte Dauphine (XVI^{e}) 7·5, the Plaine Monceau VII^{e}) 9, but the Saine Merri quarter (IV^{e}) jumps 17·8 per 1000, the Salpêtrière (XIII^{e}) to 30·5, ontparnasse (XIV^{e}) to 29·7, and Belleville (XX^{e}) to ·2. A glance at a map will show the relationship tween these figures and the situation of parks and en spaces. On the whole Paris is keeping abreast other large European cities in its fight against bad housing conditions, overcrowding, and consequent spread of infection. The post-war invasion of some quarters of the city by large numbers of foreign immigrant workers has been met by an increase in the number of dispensaries where out-patient treatment can be obtained, and serious efforts are now being made, under the impulsion of the Office National d'Hygiène Sociale, to raise the public health services to the level of modern standards.

Strauss has pointed out to the Académie de Médecine that some 69,000 deaths are preventable in France, chiefly those of infants and those due to tuberculosis. A committee has been appointed to examine the problem.

Hospital Extensions.

The obstetric service at the Hôpital Boucicaut, which has greatly increased, requires enlargement and improvement, which have been provided, together with a radioscopic laboratory.

The Paris Municipal Council has just voted funds for the erection, at the Hôpital St. Louis, of a pavilion for the care of leprosy and of a dispensary for venereal cases. The laboratory, which has proved of special value in the study of parasitic diseases of the skin, is receiving an increase of 6000 francs in the fund devoted to its operation.

The radiographic service at the Salpêtrière has increased to such an extent that it requires enlargement and additional personnel.

The sum of 188 million francs has just been allotted to the repair of four of the larger Paris hospitals, whose condition has become urgently in need of improvement. The hospitals in question are the Broussais, Bichat, Beaujon, and Charité.

Inauguration of an International Medical Centre.

This new enterprise was opened on Dec. 20th at 10, Avenue d'Iéna, Paris, in quarters occupying a part of the house formerly owned by Prince Roland Bonaparte. The new centre places a library, information bureau, reading rooms, and other aids at the disposal of the members, and constitutes a medical club for meetings and interchange on medical questions.

The Association for Developing Foreign Medical Relations, of which Prof. Henri Hartmann is president, is proving of great value as an agency for the extension of French medical interests abroad. Monsieur Charlety, rector of the University of Paris, is assuming an active share in the labours of this organisation. Profs. Achard and Hartmann will supervise a medical exposition to be held next March at Athens.

Plans are maturing for an elaborate celebration next spring of the twenty-fifth anniversary of Charles Nicolle's directorship of the Pasteur Institute at Tunis. A committee is arranging for a fête and for the striking of medals. Those wishing to attend the ceremony at Tunis will be granted reduced fares and travelling facilities, of which particulars may be had from Dr. F. Gérard, 100, rue de Serbie, Tunis.

Deaths of Medical Men.

Besides Prof. De Jong, whose death at the early age of 45 years is a real loss to pharmacology, the medical circle in Paris has just been robbed of Patein, member of the Académie de Médecine ; Keller, radiological chief at the Bicetre ; Leblanc, hospital physician ; Danysz, laboratory chief at the Pasteur Institute and originator of the well-known vaccine, and Henneguy, member of the French Institute and of the Académie de Médecine.

A recent issue of the *Paris Médical* was devoted to the biography of Prof. Gilbert, its founder and first director, and contained a number of articles on different aspects of the man and his work.

The surgical prize awards of the Société de Chirurgie consist of the Edouard Laborie prize of 1200 francs, awarded to Ménégaux, of Paris, for his study of a comparison of surgical and radiant treatment in lingual cancer ; the Duval-Marjolin prize of 300 francs, bestowed upon Barret, for a clinical and therapeutic

discussion of extra-uterine pregnancy; and the Ricord prize of 300 francs, granted to Vanlande for investigation of acquired non-neoplastic stricture of the small intestine.

A special conference for the discussion of social defence against syphilis will be held at Nancy from May 29th to 31st. The questions on the agenda are: (1) frequency and cost of syphilis; (2) education of the public; (3) antisyphilitic dispensaries; and (4) organisation for combating congenital syphilis.

The prevention of diphtheria has proved both popular and effective in France. The vaccine generally employed is the Ramond anatoxin, which is atoxic but actively antigenic, and prepared by treating diphtheria toxin with formaldehyde. The French supply is nearly exhausted and the deficiency cannot be met by the Pasteur Institute for at least two months. Results have been especially extensive and excellent in the fifth arrondissement of Paris.

The French Government has announced the organisation of an extensive expedition to combat sleeping sickness in French Equatorial Africa. The expedition will consist of a corps of 33 experts, working under the direction of the Paris Pasteur Institute, and will especially study eradication of the tsetse fly. Special salaries, exemptions from taxation, and prizes for meritorious work are being provided in the campaign, which will cover a minimal period of five years.

Marage has just presented to the Académie des Sciences an interesting study on Beethoven's deafness, which was seemingly due to lesions of the internal ear only. Diagnosis was based upon tinnitus preceding the deafness, initial deafness for sounds of high pitch, and rapid progression of the loss of hearing.

Gosset, surgical chief at the Salpêtrière, was elected to membership in the Académie de Médecine on Jan. 24th.

UNITED STATES OF AMERICA.

(FROM AN OCCASIONAL CORRESPONDENT.)

Newspaper Medicine.

THE tendency for medical men to supply popular articles to the press is increasing. Lately the Academy of Medicine of Toledo, Ohio, has gone quite seriously into the business. They feel by this means advertising propaganda and the evil effects of cultist literature are counteracted. Articles have for some time been furnished gratis to various publications in the State and even outside Ohio. The Academy of Medicine is now preparing to distribute articles on a business basis. The following extract from an article published in the *Toledo Times* may have a double interest to British medical readers, since it not only illustrates the style of newspaper medicine, but will enable them to see themselves as they are seen by American colleagues:—

More than 15 million people are compulsorily insured in the British isles, and after 14 years of unhappy experience both patients and doctors find the system very unsatisfactory. Some of the reasons for the failure of State medicine in England are: (1) It is an enormous expense to the Government. (2) It encourages perfunctory, inferior service, and inadequate medical treatment. The doctor receives compensation whether his services are good, bad, or indifferent. (3) It develops large numbers of neurotics who run to the doctor with every conceivable ailment, whether real or imaginary. It encourages costly malingering. (4) Public dissatisfaction has resulted in an ernormous increase of quackery and cultism. (5) The people lose the right to select their own doctor. (This one item should condemn State medicine for the United States.) (6) It undermines medical initiative, does not recognise merit, forgets the stimulation of medical research, and tends to paralyse medical progress. (7) It discourages the ambitious youth from the study of medicine and leaves the field to men of inferior talent. In America we cannot afford to retard the progress of medical knowledge by Government control. A scheme, such as the "panel system," is full of restrictions, swamped with intolerable "red tape" and graft. . . .

Spray Coating.

The process of finishing has been revolutionised the last ten years by the development of the compress air spray. This method of applying paint or enamel not without its hazards to health. The Nation Safety Council, taking cognisance of these ris appointed a strong committee representing manufa turers, federal bureaux, and national organisatio which has made a careful investigation and b submitted a majority report. Definite evidence w found of poisoning from benzol from the use of benz lacquer sprays, of lead poisoning, and of silicosis. T evidence of the latter was the least conclusive, bei dependent on the interpretation of radiograms; thus nine workers who had been employed in the sprayi industry for more than three years two gave X r evidence of silicosis, and one of probable silicosis. T committee concludes that an exhaust velocity 200 linear feet per minute offers reasonably effecti protection against benzol. Ordinary respirators a ineffective, but a special type known as a positi pressure respirator, under which the face is bathed pure air above atmospheric pressure, is found to effective when properly designed and operate Periodic medical examinations are recommended be made at frequent intervals. The content of spra in benzol, lead, and silica should be reduced to a held at a minimum.

The Common Cold.

Interest in the ætiology of the common cold h been once more revived through the recent gift $195,000 to the Johns Hopkins University by t Chemical Foundation for research on this subje The fund is named the John J. Abel Fund in hono of the professor of pharmacology, and will be admin tered by professors from the School of Hygiene a the School of Medicine of the University. A somewh novel line of research was recently opened up by t papers of Drs. Volney and Cheney to the Americ Public Health Association. Dr. Cheney finds th colds are not contagious; he failed completely inoculate healthy persons with secretions from ac colds. On the other hand, he finds constantly sufferers from colds a decrease in alkali reserve and increase in bicarbonate tolerance. He is able to indu all the symptoms of a cold by induction of artific acidosis through the administration of ammonium a calcium chlorides, and he can regularly abort colds the early stage or cure them in a slightly later stage alkali therapy. Needless to say, the audience did n accept this thesis without protest, and it is improba that any large proportion of them were convince but the suggestion is perhaps worthy of investigati

MEDICINE AND THE LAW.

A Dilemma in Loyalties.

AN action brought last week at Chester Assi against two medical practitioners illustrates continuous exposure of the medical profession actions for damages based on allegations of negligen A patient was suddenly seized with pain, a doc was summoned who formed the conclusion that trouble was due to a burst gastric ulcer, and the pati was taken to the Chester Royal Infirmary for operati Dr. R. S. Graham, assistant surgeon, conducted operation along with Dr. W. G. Love, the sen house surgeon. A large perforation was fou During the later part of the operation a crisis occurr the anæsthetist giving warning that the patient m be got off the operating-table immediately. Unless wound was closed up forthwith the patient would on the table. Dr. Graham formed his decis promptly, and sewed up the wound while Dr. L injected saline. The patient's life was saved. D Dr. Graham waited while the nurses counted swabs and instruments the man would have di Subsequently when they were counted, one instrum was found missing and the fact was duly report

Thirteen days after the first operation a second operation became necessary, the missing forceps was found in the body; there was no sepsis and it was easily removed, but the patient died. His widow brought an action against Dr. Graham and Dr. Love, relying upon the mere fact of the forceps being left in the body as evidence of negligence. In the circumstances already described and entirely undisputed there was plainly no evidence that the leaving of the forceps was due to want of care. When the defendants' evidence had been fully given the plaintiff's counsel put the widow's case as follows. First, it was negligence that the forceps was left in the body—a fact not rebutted by the defendants; secondly, it was negligence to close up the wound without waiting for the usual complete checking of the number of the 60 or 70 instruments employed; thirdly, there was negligence because the sister who should have been counting the instruments was in fact doing something else—namely, assisting Dr. Love to inject the saline. The learned judge had already stopped the case against Dr. Love against whom there was no possible evidence. He then asked the jury two questions: were they satisfied that Dr. Graham had been negligent, and, if so, were they satisfied that his negligence had caused the death? The jury, after a very brief absence, found for the defendant, Dr. Graham, for whom judgment was accordingly given.

The case is particularly instructive. Dr. Graham was faced with two grave alternatives at the crisis of a desperate operation. By delaying the final stages of the operation while the instruments were formally checked he would have sacrificed the patient's life, but would have protected his own professional reputation against any possibility of litigation. On the other hand, by closing the wound at once and by risking the presence of an instrument in the body, he would give the patient a chance of life though he would expose himself to possible proceedings. Dr. Graham rightly chose the second course and placed his patient's interests before his own. The patient gained some 13 days of life instead of being left to die upon the operating-table while the instruments were counted. No clearer instance could be cited of the doctor's duty being faithfully discharged, and yet his reward has been the anxiety and ordeal of a long awaited trial and the unenviable publicity for which even the clear verdict of the jury is hardly an adequate compensation.

Correspondence.

"Audi alteram partem."

MOTOR-CAR ACCIDENTS AND HOSPITALS.

To the Editor of THE LANCET.

SIR,—In your annotation last week you remarked on the pressure upon hospital beds caused by the rapid increase in the number of motor-car accidents. Being impressed by the number of these accidents I kept a record of the cases admitted to the male accident ward at the Northampton General Hospital during the seven months April to October, 1927. This period covers the season when such accidents are most common. The Northampton General Hospital is the principal hospital in the county, serving a town of some 90,000 inhabitants and a wide area of surrounding country.

During the period under review 70 adult male accident cases were admitted; of these patients nine were residents of districts outside a 20-mile radius from the town. Of these 70 casualties 50 were caused by motor-cycles either skidding or colliding with other vehicles; three were caused by cars upsetting or colliding; 11 were pedestrians knocked down by cars; four were cyclists knocked down by cars; one man fell off the back of a motor-van; one man was knocked off a ladder by a car. In this series there were nine deaths, all due to head injuries. One man was transferred to another hospital suffering from paralysis due to fractured spine. Of the nine deaths seven were due to motor-cycle accidents and two were caused by a car knocking down a pedestrian.

Taking the 50 motor-cycle accidents we find:—

7 deaths and 1 case of paralysis; 6 cases of fractured femur; cases of fracture of the leg bones, of which 4 were compound; 3 cases of concussion with or without scalp wounds; case of compound fracture of the humerus; 1 case of fracture of both bones of the forearm; 1 case where the skin was stripped off the back of the hand, necessitating pedicle graft from the skin of the abdomen. There were no amputations.

Cars colliding or upsetting were responsible for one fractured tibia, one fracture of ribs, and one fracture of a cervical vertebra. Cars running down pedestrians or cyclists caused two deaths, fracture of both femurs in one case, concussion in five cases, compound fracture of humerus one case, fractured ribs two cases.

These 70 patients occupied beds for an average period of 25½ days, the total cost to the hospital being £770. The total number of beds at this hospital is 225. After providing beds for special departments there are 70 beds available for adult male surgical cases. Reference to figures already given shows that, for at least seven months of the year, from eight to nine of these beds are continuously occupied by the victims of road accidents.—I am, Sir, yours faithfully,

C. C. HOLMAN, M.B., F.R.C.S.,
Hon. Surgeon, Northampton General Hospital.

Feb. 11th, 1928.

DISPOSAL OF THE DEAD.

To the Editor of THE LANCET.

SIR,—Your leading article last week stresses the care we take to prevent bodies being disposed of. No attention is drawn to the absence of any legal requirement compelling a body to be disposed of—a curious lacuna in our burial law. Most practitioners must have encountered difficult cases. I recall a lone widow, a patient, overpowered by grief and alcohol, who declined to consider her husband dead. She kept the body nice and warm with fires in the room and hot-water bottles in the bed. She poured beef tea into the unresisting mouth. At last, after about a week, during a moment when she was experiencing post-alcoholic depression, I "read the Riot Act," threatening to put in force the powers of the non-existent law by calling in the police, and an interment was effected. Surely we ought to copy countries in warmer climates and fix a limit of time for the disposal of a body.

I am, Sir, yours faithfully,

EDGAR L. COLLIS.

Welsh National School of Medicine, Cardiff, Feb. 13th, 1928.

INFLUENZAL PNEUMONIA OR ENTERICA?

To the Editor of THE LANCET.

SIR,—I am putting on record the following notes, chiefly in order to obtain information from others who may have observed similar cases recently.

A certain amount of influenzal pneumonia was being admitted to the Sunderland Infectious Diseases Hospital, when a case of enteric fever was notified that had been treated for pneumonia till typical spots came out and the Widal reaction was found to be positive 1 in 25. This case was followed by another which had been in contact with the first and also gave a 1 in 25 positive Widal; the patient died. Thereafter over a period of some weeks five patients were admitted as influenzal pneumonia with the following features in common: very ill on admission, moist sounds in lungs, epistaxis before or after admission, abdominal pain, slightly enlarged spleen, typical rose-pink spots on the sixth day fading four or five days later, by the eighth day temperature falling by lysis, feeling of exceptionally well-being by the tenth or eleventh day, though a few spots were still present

or cropping out. Convalescence was exceptionally rapid, the Widal reaction remaining negative for typhoid, paratyphoid A and B. Practically all the cases occurred in adults.

I would ask: Were these cases of atypical enteric fever or abortive enteric or were they cases of influenzal pneumonia with enteric-like spots which rapidly improved on removal from their homes to the purer country air? It is to be remembered that all were obviously very ill on admission, and all quickly improved on admission, though most were admitted on the third day of illness, it was striking how far more rapidly they improved than the cases of influenzal pneumonia in the same ward. On inquiry amongst practitioners in the town I heard of three apparently similar cases.—I am, Sir, yours faithfully,

EUSTACE THORP.
Deputy Medical Officer of Health, Sunderland.

Borough Sanatorium, Feb. 9th, 1928.

TREATMENT OF THE MALARIAS.

To the Editor of THE LANCET.

SIR,—I do not wish to take up your space by entering into a controversy upon the merits or demerits of plasmochin. Dr. Manson-Bahr has, I am afraid, missed the point I tried to enforce. My simile of the goose would, I thought, have appealed even to non-ornithological readers. In quoting me Dr. Manson-Bahr has not put in the full sentence I used. I did not say "will act better than either given alone," but "it is quite possible, of course, that . . . a combination of these two drugs will act better than either given alone, but time only and careful observations will show this." We may leave it at that. The subject is too young yet to dogmatise upon.

I am, Sir, yours faithfully,

G. CARMICHAEL LOW.

Brook-street, W., Feb. 10th, 1928.

THE PRESENT POSITION OF THE VOLUNTARY HOSPITALS.

To the Editor of THE LANCET.

SIR,—I do not wish to trespass personally further on your space, for there are many, I am sure, much more fitted to discuss this question. I must just say that Dr. Little attributes to me several statements I never made. With some of them I agree, with others not. The "20 per cent." statement was not mine. In regard to my "brick," as he genially calls it, I disown it, but I stick to it, if you will pardon me. If Dr. Little really wants to know, let him write to the medical superintendents of London poor-law hospitals and ask them how many spare beds they have. It is quite easy. I can give him a good start myself with 120 or so *extra beds filled* over the proper complement. My statement referred expressly to London. I said nothing about the rest of the country, not having personal knowledge about that; but I think it would be worth while to inquire how many of the supposed surplus beds are in country unions neither situated nor equipped to be useful to the chief centres of population. For the rest I leave it to your readers to judge how far Dr. Little has met the various points raised. I am, Sir, yours faithfully,

J. C. MUIR.

Whipps Cross Hospital, Feb. 10th, 1928.

RECURRENT COLDS.

To the Editor of THE LANCET.

SIR,—May I support Dr. A. L. Grant's letter in your last issue. I also have found, both in my own case and in the cases of others, that I can either prevent, abort, or cut short not only that dangerous condition, the common cold, but influenza also by means of Mr. J. E. R. McDonagh's symmetrical ureas.

I am, Sir, yours faithfully,

MACLEOD YEARSLEY.

Wimpole-street, W., Feb. 14th, 1928.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS

RESUMED DEBATE ON THE ADDRESS.

IN the course of the resumed debate in the House Commons on Wednesday, Feb. 8th, on the motion tha humble Address be presented to His Majesty in reply the gracious Speech from the Throne,

Mr. HARRIS said that he had great respect for the Minis of Health, for whatever his faults might be they reali that he had knowledge and experience. They had ho for great reforms from him. Towards the end of 1 the right hon. gentleman produced a most interest and almost an historic document in which proposals w put forward for poor-law reform which were to form basis for consideration and discussion by local authorit In 1926 he (Mr. HARRIS) asked the Government when th proposals would take the form of an Act of Parliame and he was informed that the Government wanted a y for consideration. They had had a year. They underst that the Poor-Law Bill would make its appearance dur 1927, but they were told by the Minister of Health t although he was full of goodwill and good intentions programme of the Government was so crowded with ot matters that there was no time to deal with this import question. Nobody could say that the King's Speech t year disclosed an overcrowded programme. There wo have been plenty of time to deal with the vital question poor-law reform. It was not because the Governm were not prepared. The Ministry had been thinking o the matter for two or three years, and there had b constant conferences with local authorities. He underst that there was something like general agreement. W had the Government run away from this question? was now stated that poor-law guardians were to stay that there was to be no reform. Could not the Governm with their big majority force through Parliament the sche which they thought necessary? Did the Governm want to leave the question to be dealt with by the Lab Party or the Liberal Party because they did not feel t they were competent to deal with it? Having dropped Factory Bill, was it not about time that the Governm really did some constructive work and put forward sc scheme to deal with this thorny social problem? They wo never get a solution of the problem of necessitous a without taking in hand the reform of the poor-law. present poor-law system worked badly throughout country. London had a right to demand that the syst of government should be changed. The present poor- system was gradually breaking up. Through the machin of old age pensions the old people were gradually be taken out of the poor-law, and, thanks to the extensio the Education Acts, a large number of children were r relieved through the machinery of the education authorit All who now remained were the sick and the able-bod The original scheme was that the hospitals throughout country should be transferred to the county authorit That would be a very simple proposal to carry throu and would not require any complicated legislation. E the able-bodied who required assistance were very larg at any rate for a period, taken away from the local re and were paid out of national funds through the machin of the Insurance Act. Did it not seem the natural lin advance to remove from the local rates the able-bodied p or to use the phrase in a scheme put forward by the Minis of Health, to correlate the system of relief with the machin of unemployment insurance? If they took the able-bo poor out of the control of the poor-law guardians, removed the children from their care, and took away old people, there was little work left for the guardians do. The Government, he suggested, were under an obli tion to the nation to translate into a Bill the scheme outli by the Minister of Health in 1926.

Lieut.-Colonel ACLAND-TROYTE urged that one way which the Government could help agriculture was refraining from throwing more burdens on agricultur by Orders like the Milk and Dairies Order, and for Prohibition of Preservatives in Cream. The Governm were quite ready to bring in Orders like these, but when t were asked to introduce an Order to prohibit the importa of condensed skimmed milk they would not do it.

Mr. GROVES raised the question of slum clearances West Ham. Every month, he said, the medical office health of that borough reported that 80 per cent. of houses inspected were not considered in all respects reas ably fit for human habitation. The existence of this s property in big boroughs were undermining the healt our future citizens, and increasing the deaths among child He believed that the Government were going to inte themselves in a national campaign for the cure of rheumat

He wished them luck, but there were many other and better ways in which Parliament could approach this question. In West Ham they had people sleeping five, six, seven, and even ten in one room. The less capable an area was of meeting its liabilities the more the National Exchequer imposed upon it in its schemes of social reform and public health. They were proud in West Ham of the way in which —irrespective of party—they had tried to approach the problem of restoring tuberculous people to some sort of normal health, but it cost them money. Their fever hospital was one of the finest in the country, but that hospital was overcrowded. The local hospitals could not take in the people who were sick; they had to be sent to poor-law institutions. Their sanatorium was also overcrowded, and they had a large number of people on the waiting list. They did not object to bearing these responsibilities, but if the Government really intended to approach the problem of relieving local burdens here was the place to start. In West Ham nearly 3000 scholars were fed daily by the education authorities. Otherwise they would go to school hungry. They would respond to any help that could be rendered them, because they could not for many more years continue to carry their present burdens on the shoulders of the local ratepayers.

Mr. SNELL said that they had hoped that the reform of the poor-law would be dealt with during the present session. Almost associated with that problem there was another about which he felt the deepest and keenest interest. A year or two ago he served on the Royal Commission dealing with Lunacy and Mental Disorders. They presented to the Government what they considered was a well-balanced, sober, and critical judgment upon a very difficult and a very moving problem, and they had hoped that the Government would have found time to deal with the unfortunate state in which many of their afflicted fellow citizens found themselves under present conditions. There was also the question of housing. Whatever credit they might take for the improvement in housing in recent years the problem could not be regarded in any way as solved.

Mr. Chamberlain's Reply.

The debate on the Address was resumed on the 9th, when Mr. CHAMBERLAIN, Minister of Health, said that it was not a fact that local government was breaking down. It was true that local government had been placed under a severe strain, but he thought it was going to come through. The effect of such conditions as those which existed in South Wales had produced a vicious circle to which attention had been called so often in that House. Unemployment meant increased local charges, and those charges meant a further handicap to the struggling industries of the district. That matter had attracted the anxious attention of the Government. It was obvious, however, that any relief to local rates which involved the shifting of the burden from the shoulders of the ratepayers to those of the taxpayers could not be confined to one or two areas in the country, and anything of that kind must be part of a general and far-reaching scheme. The time had not yet arrived when the Government could make any proposition to the House. But to those who had so often taken part in debates on necessitous areas it would at least come as a message of peace to know that the Government had not ruled out the possibility of some relief of this kind coming within the realm of practical politics.

Mr. LANSBURY said that the Minister of Health had the impudence to say that local government had not broken down. In unions such as Poplar the board of guardians did not exist. They had no power to administer. The nation would reap what it was sowing. Small-pox was a very deadly disease, and so were typhoid and other diseases. The reason why these diseases had not got a hold during the recent depression was because the physique of the people had been maintained. Food was one of the necessary things for a healthy body. The best safeguard against small-pox was——

Dr. WATTS: Vaccination.

Mr. LANSBURY said that vaccination without food would not save anyone from small-pox, and everyone knew it. He would like to ask the hon. Member, who was a good doctor, "Do you agree that muck and refuse should be left about the streets and be removed only once a week instead of twice a week"?—Dr. WATTS: No.

Mr. LANSBURY said that in that case the hon. Member was on his side. He believed that collectively the nation could do what it pleased in the matter of setting right social problems if it would give up the idea that mere wealth was the only thing that mattered.—The debate was adjourned.

PROTECTION OF DOGS BILL.

On Monday, Feb. 13th, Sir ROBERT GOWER presented the Protection of Dogs Bill, a measure "to prohibit the vivisection of dogs." The Bill, which is supported by Lieut.-Colonel Moore, Mr. Bromley, Mr. Macquisten, Mr. Thurtle, Captain Arthur Evans, Mr. Sexton, and Mr. Radford, was read a first time.

HOUSE OF COMMONS.

WEDNESDAY, FEB. 8TH.

Cost of Social Services.

Mr. BECKETT asked the Minister of Health the amount per head of population distributed on the following services for 1926–27: poor-law relief; old age pensions; National Health Insurance benefits; domiciliary poor-law relief; orphans' pensions; contributory widows' pensions; and contributory old age pensions.—Mr. CHAMBERLAIN replied: Information showing the amount expended, per head, of estimated population by poor-law authorities in England and Wales on poor-law relief in the year ended March 31st, 1927, is not yet available, but the amount for the year ended March 31st, 1926, was 20*s.* 7¼*d.*, including 8*s.* 1*d.* on outdoor relief in money and kind. The amount expended, per head of estimated population, by those authorities on outdoor relief in money and kind for the year ended March 31st, 1927, was 12*s.* 0¾*d.* As regards the remainder of the question the figures are:—

	s.	*d.*
Old age pensions under the Old Age Pensions Act, 1908–1924	13	6·7
National Health Insurance benefits	14	7
Orphans' pensions under Widows', Orphans' and Old Age Contributory Pensions Act, 1925 ..	0	1½
Widows' pensions under Widows', Orphans', and Old Age Contributory Pensions Act, 1925 ..	3	0

Old age pensions under the latter Act were not payable till Jan. 2nd, 1928.

Cost of Poor-law Maintenance.

Mr. BECKETT asked the Minister of Health the average daily number of persons maintained in workhouses; the average weekly cost per person; The total amount expended in connexion with the institutions; the number of adults maintained; the number of children under 16; and the total number of officers and staff employed in 1926–27.—Mr. CHAMBERLAIN replied: The latest information available as regards the maintenance of persons in general poor-law institutions in England and Wales (that is, institutions other than those wholly appropriated to the sick and mentally infirm, and establishments for children in cases where separate accounts are kept) relates to the year ended March 31st, 1926, and such of the particulars asked for as can be given, are, in respect of that year, as follows:—

Average daily number of inmates	134,418
,, weekly cost per inmate	24*s.* 2*d.*
Total expenditure in connexion with those institutions	£8,469,749

The average daily number of adults and children in these institutions has not been ascertained, but the numbers on Jan. 1st, 1926, were 123,373 adults and 11,075 children under 16 years of age. I regret that I am unable to give the numbers of the staff employed.

Voluntary Health Insurance Contributors.

Mr. RHYS DAVIES asked the Minister of Health the number of persons who had become voluntary contributors under the Health Insurance scheme consequent upon the passing of the Widows', Orphans', and Old Age Contributory Pensions Act; and, if so, how did the number compare with the actuary's calculations when the Act was passed?—Mr. CHAMBERLAIN replied: The number of persons who became up to the end of 1926 voluntary contributors, consequent on the passing of the Widows', Orphans' and Old Age Contributory Pensions Act, is estimated at 150,000, or about 10 per cent. more than the number assumed in the Government actuary's calculations for the purpose of the Bill.

THURSDAY, FEB. 9TH.

National Health Insurance Funds.

Mr. FENBY asked the Minister of Health what was the total amount of funds invested, directly or indirectly, on behalf of approved societies under the National Health Insurance Act on Dec. 31st in each of the years 1923, 1924, 1925, 1926, and 1927; and, if the information was not available for Dec. 31st, 1927, what was the amount of the funds so invested on the last available date.—Mr. CHAMBERLAIN replied: The approximate amount of funds invested, including the temporary investment of current balances, on Dec. 31st in each of the years specified was as follows:—

1923	£87 million	1926	£113 million
1924	101 ,,	1927	111 ,,
1925	114 ,,		

Slum Clearance Schemes.

Mr. WELLOCK asked the Minister of Health the number of slum clearance schemes sanctioned by his department for the various local authorities in Worcestershire, and the total amount of money granted by his department in each case.—

Mr. CHAMBERLAIN replied: Three slum clearance schemes have been confirmed in Worcestershire, two at Oldbury, and one in the city of Worcester. The annual Exchequer contributions in aid of the schemes have not yet been fixed, but on provisional figures they are estimated at £500 in respect of the three schemes, representing 50 per cent. of the estimated annual loss.

Stimulation of Milk Consumption.

Mr. BUXTON asked the Minister of Agriculture what steps he proposed to take to stimulate the consumption of milk in accordance with his recent statement to the Council of Agriculture.—Mr. GUINNESS replied: The Empire Marketing Board, after consultation with the Ministry of Agriculture, propose to undertake next April a publicity campaign in favour of the consumption of fresh milk. The campaign will extend over six months in the first instance, but it may be continued for a further considerable period, if the preliminary results are satisfactory and if producers' and distributors' organisations then show themselves prepared to devote to publicity for the same purpose a sum equal to that contributed by the Board. I need hardly add that I propose to do all I can to promote this scheme and ensure its success.

Mr. BUXTON: Will the right hon. gentleman endeavour to guard against a price-raising campaign because a rise of price occurred in the case of the fruit campaign?

Mr. GUINNESS: I do not think there ought to be any rise in price. As the right hon. gentleman is aware, there is a considerable excess of milk which cannot find a fresh market at the present time, and that could quite well be absorbed, I should imagine, without any serious effect in a rise in price.

Mr. MONTAGUE: Will the right hon. gentleman make representations to other Ministers as to the discouragement of the consumption of milk likely to be due to the announced reduction in miners' wages?

Colonel HOWARD-BURY: While encouraging the consumption of fresh milk will the right hon. gentleman discourage the importation of foreign condensed milk?

Lieut.-Commander KENWORTHY: Will the right hon. gentleman also discourage the consumption of alcohol?

Dr. DRUMMOND SHIELS: Will the right hon. gentleman see that in this advocacy of fresh milk some measures are taken to discriminate between tuberculosis-free milk and other milk which may be dangerous?

Mr. GUINNESS: There has been a most remarkable improvement in the condition of the milk supplies. The proportion of tuberculous milk is very much lower than it was a few years ago, and I do not think any more can be done than is being done at the present time in the way of improving our supply of milk and avoiding this danger.

Lieut.-Colonel FREMANTLE: Does the Minister propose in this publicity campaign to work with the Ministry of Health, who are naturally able to get at the medical channels of recommending milk and who have already a publicity campaign on hand?

Mr. GUINNESS: We will certainly work in conjunction with the Ministry of Health.

MONDAY, FEB. 13TH.

Beet-sugar Effluent and Public Health.

Major GEORGE DAVIES asked the Minister of Agriculture what progress, if any, had been made towards solving the problem of the disposal of the effluent from beet-sugar factories in such a way as to avoid any menace to the health, sporting facilities, and general amenities of the surrounding population.—Lord EUSTACE PERCY (President of the Board of Education), who replied on behalf of the Department of Scientific and Industrial Research, said: Satisfactory progress is being made with the experiments which are being conducted by the department in the biological treatment of the waste waters of beet-sugar factories. The data accumulated in the course of a semi-commercial scale trial at one of the factories during the manufacturing campaign just closed are now under consideration. While promising results are undoubtedly being obtained, it is as yet too early to say whether the experiments will lead to an economic solution of the problem. It is further understood that at most of the factories additional plant has been installed for the improvement of the effluent.

Miners' Nystagmus.

Mr. THOMAS WILLIAMS asked the Minister of Labour how many ex-miners who had suffered from nystagmus, and who were unable to obtain work, were receiving unemployment pay on the last date for which figures were available.—Mr. BETTERTON, Parliamentary Secretary to the Ministry of Labour, replied: I regret that no figures of the kind asked for are available.

Infection from Domestic Refuse.

Sir ROBERT THOMAS asked the Minister of Health whether any action had recently been taken, or was about to be taken, by his department to urge local authorities to use covered sanitary dustcarts, in order to minimise the risk of infection from refuse blown about the streets.—Sir KINGSLEY WOOD replied: Local authorities are increasingly making use of dustcarts with covers and are encouraged by my department to do so.

TUESDAY, FEB. 14TH.

Health of Railway Dining-car Attendants.

Sir ROBERT THOMAS asked the Minister of Transport whether he was aware that railway dining-car attendants were habitually required to be on the trains for periods up to 48 and 53 hours, with insufficient sleep and great irregularity of meals, in consequence of which there was a great deal of ill-health among these men, particularly tuberculosis and gastric disorders; and whether he would make inquiry of both the railway companies and the employees' representatives regarding the conditions of work on dining cars.—Mr. BETTERTON (Parliamentary Secretary to the Ministry of Labour) replied: I am informed by the Great Western, London, Midland and Scottish, and London and North Eastern companies that there is no foundation for the statement that the railway dining-car attendants are habitually required to be on the trains for periods up to 48 and 53 hours. The conditions of service of the staff on these lines are the subject of agreements with the National Union of Railwaymen, except on a section of the London Midland and Scottish. With regard to the Southern Railway, who do not directly employ dining-car staff, I am making further inquiries, and I will communicate with the hon. Member on the subject as soon as I have further information.

Medical News.

UNIVERSITY OF LONDON.—Dr. Donald Hunter has been recognised as a teacher of medicine at the London Hospital Medical College.

A Chair of Biochemistry, tenable at the London School of Hygiene and Tropical Medicine, is to be instituted, and applications are invited for this as well as for the Chair of Public Health at the same school, and the Chair of Pathology tenable at the London (Royal Free Hospital) School of Medicine for Women.

The University medal at the M.S. examination in December was conferred on Mr. R. M. Walker, of University College Hospital, and the medal at the M.B., B.S. examination in November on Mr. R. S. Pilcher of the same hospital.

A Carpenter medal, together with a money prize, of the value of £20 in all, will be awarded in 1928 by the Senate for a thesis of exceptional distinction in psychology submitted for the degree of Ph.D. between 1925 and 1928.

Applications for grants from the Dixon Fund must be received between April 1st and May 15th.

Applications for grants from the Thomas Smythe Hughes Medical Research Fund must be received between May 1 and June 15th.

The Laura de Saliceto Studentship for the advancement of cancer research, a part time appointment of the value £150 a year, will be awarded shortly. Applications must be received before July 2nd.

The fifteenth election of Beit Fellows will take place on or about July 16th. Applications should be sent in before April 20th.

University College.—The special short course in anatomy and physiology, designed to meet the requirements of the Primary Fellowship Examination of the Royal College of Surgeons, will begin on Monday, March 5th, in preparation for the June examination. Particulars may be obtained from the secretary of the College.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—At an ordinary meeting of the Council held on Feb. 9th, Sir Berkeley Moynihan, President, in the chair, the proposal to send examiners to Canada to hold a primary examination in anatomy and physiology for the Fellowship at Toronto in 1929 was further considered, and a revised scheme was approved. Instructions were given to the secretary to forward a copy of the revised scheme to the Canadian Medical Association for consideration.—Mr. C. H. Fagge was appointed Bradshaw Lecturer for the ensuing year.—Sir Berkeley Moynihan was appointed delegate to take part in the centenary celebration of the Faculty of Medicine Cairo, and the International Congress of Tropical Medicine and Hygiene to be held at Cairo from Dec. 15th to 22nd.—It was reported that an election would take place on Thursday, July 5th, to fill the four vacancies on the Council occasioned by the retirement in rotation of Sir Anthony Bowlby, Sir D'Arcy Power, and Mr. F. J. Steward, and by the death of Mr. Thelwall Thomas; that notice of the election would be given to the Fellows by advertisement and by circular on March 9th; that March 19th would be the last day for the nomination of candidates; and that

oting paper would be sent on April 3rd to every Fellow the College whose address is registered at the College.—he Diploma of Fellow was conferred upon Harry Isaac eitch, M.R.C.S., L.R.C.P., Middlesex and London Hospitals, ho has previously passed the required examinations and as now complied with the bye-laws of the College.—The ouncil conferred diplomas of M.R.C.S. upon 164 candidates, hose names appeared in our issues of Feb. 3rd and 10th, having received licences from the Royal College of hysicians. Thirteen, however, received their membership previous meetings of the Council.

ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF LASGOW.—At the monthly meeting of the Faculty held n Feb. 6th, Dr. Freeland Fergus, on behalf of Mr. J. B. illiard, presented to the Faculty the surgical pocket-case sed by David Livingstone in his daily work in Africa. In aking the presentation, Dr. Fergus quoted interesting articulars from a letter he had received from Mr. Hilliard, nd deeply regretted the donor's inability to be present, wing to ill-health. Mr. Hilliard had been born in the oyal Infirmary, for his father, as cutler and instrument-aker to the infirmary, had at that time had an official esidence in the precincts of the hospital. It had been at r. Hilliard's suggestion that Mr. W. Ewing Gilmour ad presented to the Royal Faculty the instrument-case hich had belonged to Dr. Beatty, R.N., surgeon on board the *Victory* at the Battle of Trafalgar. It had been character-tic of Livingstone to surmount difficulties; it was character-tic of him, after his day's work was done in the Blantyre ill, to trudge all the way from Blantyre to Glasgow to ttend lectures on chemistry, and then to return on foot o Blantyre after the lecture was over. The same spirit ad been seen throughout his whole life. It had come atural for him to face all the privations and trials which e encountered in carrying out his great work as missionary, xplorer, and philanthropist. The Faculty received the nteresting and unique relic with acclamation.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH.—quarterly meeting was held on Feb. 7th, when Drs. David uncan Main, Charles John Shaw, Ronald Gray Gordon, nd Thomas Yule Finlay took their seats as Fellows of the ollege. Major Amir Chand, I.M.S., and Dr. James Thomson Dundee) were elected Fellows of the College. Dr. David ees, D.S.O. (Edinburgh), Dr. Premankur De (Calcutta), r. Edward Robt. Chas. Walker (Aberdeen), Dr. J. D. Allan ray (Leith), Dr. Donald Ross (Lochgilphead), Dr. Chas. A. asker (Bournemouth), Dr. Donald Jack (Edinburgh), and r. Alex. H. Rintoul (Kennoway, Fife) were elected members f the College.

WEST AFRICAN MEDICAL STAFF LIST.—The Crown gents for the Colonies have published a revised edition of he West African Staff List, showing appointments and ervices of all medical officers up to Nov. 30th, 1927. The ames are classified alphabetically, by grades, and by olonies. The booklet may be obtained from Waterlow nd Sons, Ltd., or from 4, Millbank, S.W. 1.

LAMBETH GENERAL LYING-IN HOSPITAL.—The Lord Mayor of London last week presided at the Mansion House t a meeting in aid of the appeal for £40,000 to rebuild nd equip the nurses' home and out-patients' department f this hospital. Among the speakers were Mrs. Stanley Baldwin, the Earl of Birkenhead, and Lord Dawson of Penn. The last-named said that he was puzzled as to how the work f the hospital was carried on, the building being ancient, ut of date, and hampered by every kind of mechanical difficulty." It was announced that £15,000 had then been btained towards the required total.

MOORFIELDS ANNUAL DINNER.—The annual dinner f past and present students of the Royal London Ophthalmic Hospital was held at the Langham Hotel on Feb. 8th. ir Wilmot Herringham presiding. About 80 students ere present, and among the guests were Sir John Rose Bradford, Sir James Berry, Vice-Admiral Arthur Gaskell, ir Matthew Fell, Prof. Elliot Smith, and Prof. H. Hartridge. n the course of the evening Mr. C. B. Goulden, dean of the chool, presented a report on the year's work. The number f new students was 120, the total attending being 216. Among the successes gained by students last year were wo diplomas of F.R.C.S. (Edin.) in ophthalmology. For he first part of the D.O.M.S. 43 students presented themelves and 28 passed; for the second part 42 presented hemselves and 26 passed. A new departure had been made y obtaining the service of lecturers outside the hospital o give courses or occasional lectures. Dr. H. M. Traquair, of Edinburgh, had lectured on Perimetry, Prof. Hartridge on he Resolving Power of the Eye, and in the coming term Prof. Elliot Smith and Dr. James Kerr would give courses. It was hoped to extend the usefulness of the school still urther in this direction by adapting a portion of the out-patients' department as a lecture room.

CHELSEA CLINICAL SOCIETY.—The fourth meeting will be held on Feb. 21st at 8.30 P.M. at the Hotel Rembrandt, Thurloe-place, S.W. Dr. E. C. Sundell and Dr. K. E. Eckenstein will open a discussion on What to Prescribe and Why. Guests are invited to the preceding dinner at 7.30 P.M.

ROYAL INSTITUTION.—On Tuesday next, Feb. 21st, at 5.15 P.M., Prof. J. S. Huxley begins a course of six lectures at the Royal Institution on the Behaviour of Animals. The Friday evening discourse on Feb. 24th will be delivered by Prof. George Gordon, on the Lives of Authors, and on March 2nd by Sir Farquhar Buzzard, on the Psychology of the Sick.

HARVEIAN SOCIETY OF LONDON.—The council has selected chronic streptococcal illnesses as the subject for the Buckston Browne Prize, which consists of a medal and £100 for the best essay sent in by Nov. 1st, 1929. The prize is open to any member of the medical profession under 45 years of age, registered in the British Isles or Dominions. Further particulars from the Hon. Treasurer, Dr. G. de Bec Turtle, 81, Cambridge-terrace, Hyde Park, London, W. 2.

UNIVERSITY OF PARIS.—An Easter holiday course of lectures will be held at the Clinique Médicale de l'Hôtel Dieu from March 29th to April 5th. The general subject will be the Blood, and lectures will be given under such titles as "Blood Pressure," "Blood Injections," "Blood Parasites," "Specific Hæmotherapy," and "Blood Groupings." The last lecture of the course will be a demonstration of the "cinematography of the blood."

UNIVERSITY OF VIENNA.—An intensive post-graduate course in neurology and psychiatry will be held from June 1st to July 31st. Systematic classes will be held in English at the neuropsychiatric clinic of Prof. Wagner von Jauregg and at the Neurological Institute of Prof. Marburg. The whole sphere of neurology and psychiatry will be covered in 300 hours, and the fee is $214. Further information may be obtained from Docent Dr. E. S. Spiegel, Vienna, I, Falkestrasse 3. Passport visas are not required for British subjects.

THE Ninth International Congress of Psychology will be held at Yale University in August or September, 1929, under the presidency of Dr. J. McKeen Cattell, of New York. This is the first American meeting; the congress met in Oxford in 1923 and in Groningen in 1926. The hosts hope to be able to arrange for the appointment of foreigners to American lectureships near the time of the congress, so that foreign attendance can be facilitated.

COOKED FOODS AND HOSPITAL PRESSURE.—At the annual meeting of the Rushden (Northamptonshire) Trades Hospital Committee, Mr. C. H. Battle, in calling attention to the increase in the number of patients, stated that two principal factors in the growth were "road traffic and the popularity of cooked preserved foods."

BOMBAY MEDICAL COUNCIL.—The Council is constituted of six members nominated by the Governor of Bombay in council—namely, Sir Temulji Nariman, L.M., F.C.P.S. Bom., M.R.C.P. Edin.; Lieut.-Colonel R. Row, O.B.E., M.D., D.Sc. Lond., L.M.S., F.C.P.S. Bom.; Lieut.-Colonel R. F. Steel, M.B., Ch.B. Dubl., F.R.C.S. Edin., I.M.S.; R. V. Patel, M.D., F.C.P.S. Bom.; Major S. S. Vazifdar, L.M.S. Bom., M.R.C.P. Lond., I.M.S.; and Lieut.-Colonel W. M. Houston, M.B., B.Ch. Dubl., F.C.P.S. Bom., I.M.S.; and six elected members, namely, N. H. Choksy, L.M.S. Bom., F.C.P.S. Bom., M.D. Freib.; Y. G. Nadgir, M.S., F.C.P.S. Bom.; G. V. Deshmukh, L.M.S. Bom., M.D. Lond., F.R.C.S. Eng.; D. M. Gagrat, L.M.S. Bom.; J. Benjamin, Hospital Assistant; and Captain N. H. Kulkarni, M.C.P.S. Bom., B.M.S. At its meeting on Oct. 17th last the council considered the case of a practitioner who had been summoned to appear before it for displaying the signboards exhibiting the words: (1) Laboratory and Vaccine Institute. Blood, Sugar-Test and Examination of Urine, Sputum, Blood, etc.; (2) 606 Clinic., thereby advertising that he adopts in the treatment of certain diseases special lines of treatment. The charge was held to have been proved, judgment being postponed to the next meeting. The council considered an application for the registration of the qualification of L.M. Dubl., granted by the Coombe Hospital, Dublin. As this qualification is not registrable in the United Kingdom, it was not accepted. The council considered an application from the Mysore University for recognition of its L.M.P. examination and decided that it lacked authority to do so as the institution is not mentioned in the schedule of the Indian Medical Degrees Act, nor affiliated to one of the institutions therein mentioned. On consideration of a letter received from a practitioner, the council resolved that in the case of general practitioners the use of the words "physician and surgeon" may be allowed after their names.

Dr. Mary Barkas has been appointed medical superintendent of the Lawn, Lincoln, in succession to Dr. Jane Shortt.

Dr. D. Robertson Dobie was presented on Feb. 6th with a gift of money by his fellow-citizens on his retirement after 27 years practice in the town and district of Crieff.

RESEARCH IN TROPICAL MEDICINE.—The Wandsworth Scholarship, of the value of £370 per annum with travelling and subsistence allowance for work overseas, will shortly be awarded by the London School of Hygiene and Tropical Medicine. Applications must be received by April 30th.

THE LATE DR. ALEX. STUART, OF CRIEFF.—The death of Alexander Stuart, M.D. Edin., is felt by a wide circle in the county of Perth where he practised all his life. Dr. Stuart qualified in Edinburgh in 1892, and held resident appointments at Leith Hospital. He was medical officer to the post-office, to the parish of Fowlis Wester, and referee for a number of insurance offices.

CALEDONIAN MEDICAL SOCIETY.—The Jubilee of this society will be celebrated in Edinburgh on Feb. 23rd and 24th under the joint presidency of Dr. W. A. Macnaughton and Dr. S. Rutherford Macphail, the two surviving founders. The jubilee dinner will take place in the hall of the Royal College of Physicians, Queen-street, at 7.15 P.M. on Feb. 23rd. The annual meeting will be held at the Royal College of Surgeons Hall, Nicolson-street, at 11 A.M. on Feb. 24th, while at 4 P.M. on the same day the University of Edinburgh are giving a reception.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED FEB. 4TH, 1928.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 386 (last week, 370); scarlet fever, 1938; diphtheria, 1623; enteric fever, 62; pneumonia, 1533; puerperal fever, 64; puerperal pyrexia, 128; cerebro-spinal fever, 14; acute poliomyelitis, 12; acute polio-encephalitis, 1; encephalitis lethargica, 33; dysentery, 5; ophthalmia neonatorum, 91. There was no case of cholera, plague, or typhus fever notified during the week.

The cases of small-pox were notified from the following 23 counties: London, 5 (Camberwell 1, Southwark 4); Bedford, 10 (Bedford); Chester, 1 (Crewe); Derby, 16; Durham, 94; Gloucester, 1 (Mangotsfield); Hertford, 1 (Watford); Lancaster, 18; Leicester, 1 (Hinckley); Lincoln, Parts of Lindsey, 10 (Lincoln); Middlesex, 1 (Hendon); Northumberland, 7; Nottingham, 13; Southampton, 1 (Southampton); Stafford, 1 (Stoke-on-Trent); Warwick, 19 (Birmingham 11); Worcester, 1 (Worcester); Yorkshire, East Riding, 1 (Hull); North Riding, 18 (Middlesbrough 16); West Riding, 69; Brecknock, 10 (Brynmawr); Glamorgan, 34; Monmouth, 54.

The number of patients at the Infectious Hospitals of the Metropolitan Asylums Board on Feb. 7th–8th was as follows:—Small-pox, 14; scarlet fever, 1759; diphtheria, 2570; enteric fever, 24; measles, 1363; whooping-cough, 160; puerperal fever, 19 (plus 18 babies); encephalitis lethargica, 75; poliomyelitis, 2; "other diseases," 49. At St. Margaret's Hospital there were 12 cases of marasmus and 12 babies (plus 8 mothers) with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns, including London, there was no death from small-pox, 2 (1) from enteric fever, 98 (45) from measles, 9 (1) from scarlet fever, 32 (5) from whooping-cough, 52 (8) from diphtheria, 41 (5) from diarrhœa and enteritis under two years, and 81 (8) from influenza. The figures in parentheses are those for London itself. Of the 53 fatal cases of measles outside London, 14 were reported from Bristol, 10 from Manchester, 4 each from Salford, Sheffield, and Plymouth, 3 from Warrington, while the figures from Glasgow and Dublin for the same week were 27 and 13 respectively. The death from enteric fever outside London was reported from Derby. The number of stillbirths registered during the week was 270 in the great towns, including 42 in London.

Medical Diary.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.
TUESDAY, Feb. 21st.—5.30 P.M., GENERAL MEETING OF FELLOWS. Ballot for election to the Fellowsh 8.30 P.M., PATHOLOGY. Communications: S. L. Bak The Histology of the Early Lesion of the Rous Sarcon G. W. M. Findlay: Pellagra in the Rat. A. B. Porte and W. D. Newcomb: Tuberculosis and Amyl Disease.
WEDNESDAY.—5 P.M., COMPARATIVE MEDICINE. Pap Dr. H. P. Bayon: The Pathology of Certain Avi Diseases Compared with that of Analogous Mor Conditions in Man and Animals. Prof. G. H. Nuttall will open the discussion. Subsequent speak will include Prof. J. B. Buxton and Dr. H. H. Sco
THURSDAY.—8.30 P.M., UROLOGY. Paper: Mr. Sw Joly: The formation of Urinary Calculi.
FRIDAY.—8 P.M., EPIDEMIOLOGY. Papers: Dr. Regin Miller: Some Public Health Aspects of Juve Rheumatism. Dr. J. T. Clarke: The Pathogenesis Rheumatic Fever in its Climatological Relationship a Possible Insect Carrier. 8.30 P.M., DISEASES CHILDREN, SURGERY. Special discussion on Chro Appendicitis in Children. Openers: Dr. Rob Hutchison (Disease in Children); Mr. A. J. Walt (Surgery).

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, W.
MONDAY, Feb. 20th.—9 P.M., Dr. F. J. Poynton: Rheuma Heart Disease in Childhood. (Lettsomian lectures (1

ROYAL STATISTICAL SOCIETY, Royal Society of Ar John-street, Adelphi, W.C.
TUESDAY, Feb. 21st.—5.15 P.M., Dr. T. H. C. Stevenso The Vital Statistics of Wealth and Poverty.

MEDICAL SOCIETY FOR THE STUDY OF VENEREA DISEASE, 11, Chandos-street, Cavendish-square, W.
FRIDAY, Feb. 24th.—8.30 P.M., General meeting. Pap will be read by Prof. Louise McIlroy and Dr. Marga Rorke on the Antenatal Treatment of Venereal Dise —Gonorrhœa. A discussion will follow.

MEDICO-LEGAL SOCIETY, 11, Chandos-street, Cavendi square, W.
THURSDAY, Feb. 23rd.—8.30 P.M., Prof. Louise McIlro Influence of Parturition upon Insanity and Crime.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS OF ENGLAN Lincoln's Inn Fields, W.C.
MONDAY, Feb. 20th.—5 P.M., Erasmus Wilson Lectu Mr. C. E. Shattock.
WEDNESDAY.—5 P.M., Erasmus Wilson Lecture: M C. P. G. Wakeley.
FRIDAY.—5 P.M., Erasmus Wilson Lecture: Mr. W. Newcomb.

FELLOWSHIP OF MEDICINE AND POST-GRADUA MEDICAL ASSOCIATION, 1, Wimpole-street, W.
MONDAY, Feb. 20th, to SATURDAY, Feb. 25th.—FELLOWSI OF MEDICINE LECTURE, Medical Society of Lond 11, Chandos-street, Cavendish-square, W. Mo 5 P.M., Dr. A. F. Tredgold: The Nature of Men Deficiency.—LONDON LOCK HOSPITAL, Dean-street, V Clinical demonstration by Major Victor Corbe Tues., 3 P.M. Limited to 12.—ROYAL WESTMINST OPHTHALMIC HOSPITAL, Charing Cross, W.C. Thu 5 P.M., Lecture-demonstration by Mr. A. Caddy: Corn Ulcers and Their Treatment.—ALL SAINTS' HOSPIT Vauxhall Bridge-road, S.W. Sat., 3 P.M., Clini demonstration in Urology by Messrs. Attwat Loughnane, Coyte, and Levy. The above are f to all members of the medical profession.—LOND LOCK HOSPITAL, Dean-street, W. Special po graduate course in Venereal Diseases for four weeks. QUEEN MARY'S HOSPITAL, Stratford, E. Intensi course in Medicine, Surgery, and the Specialties two weeks.—THE NATIONAL HOSPITAL, Queen-squa W.C. Special course in Neurology. Lectures, demo strations, including pathology.

NORTH-EAST LONDON POST-GRADUATE COLLEG Prince of Wales's General Hospital, Tottenham.
MONDAY, Feb. 20th.—2.30 to 5 P.M., Medical, Surgical, a Gynæcological Clinics. Operations.
TUESDAY.—2.30 to 5 P.M., Medical, Surgical, Throat, No and Ear Clinics. Operations.
WEDNESDAY.—2.30 to 5 P.M., Medical, Skin, and E Clinics. Operations.
THURSDAY.—11.30 A.M., Dental Clinics. 2.30 to 5 P.M Medical, Surgical, and Ear, Nose, and Throat Clini Operations.
FRIDAY.—10.30 A.M., Throat, Nose, and Ear Clini 2.30 to 5 P.M., Surgical, Medical, and Children's Disea Clinics. Operations.
On Tues., at 2.15 P.M., and Fri. at 2.30 P.M., there will al be demonstrations of medical and surgical cases Dr. A. J. Whiting and Mr. E. Gillespie respectively.

WEST LONDON HOSPITAL POST-GRADUATE COLLEG Hammersmith, W.
MONDAY, Feb. 20th.—11 A.M., Mr. Tyrrell Gray: Surgi Wards. 2 P.M., Dr. Ironside: Medical Out-patien 2 P.M., Mr. Simmonds: Surgical Out-patien 4.30 P.M. Dr. Snowden: Conversion Neurosis (lectur
TUESDAY.—11 A.M., Mr. Endean: Demonstration Venereal Diseases. 2 P.M., Mr. Addison: Operatio 2 P.M., Mr. Hamblen Thomas: Throat, Nose a Ear Department.

WEDNESDAY.—10 A.M., Dr. Burnford: Medical Wards. 2 P.M., Mr. Tyrrell Gray: Operations. 2 P.M., Dr. Scott Pinchin: Medical Out-patients.
THURSDAY.—10 A.M., Dr. Grainger Stewart: Neurological Department. 2 P.M., Mr. Donald Armour: Operations. 3 P.M., Sir Henry Simson: Gynæcological Wards. 4.30 P.M., Mr. Simmonds: Surgical Emergencies (lecture).
FRIDAY.—10 A.M., Dr. Pritchard: Medical Wards. 10.30 A.M., Dr. Dowling: Skin Department. 2 P.M., Dr. Shaw: Medical Out-patients.
SATURDAY.—9.30 A.M., Dr. Burnford: Bacterial Therapy Department. 10 A.M., Dr. Owen: Medical Diseases of Children.
Daily, 10 A.M. to 5 P.M., Saturdays 10 A.M. to 1 P.M., In-patients, Out-patients, Operations, Special Depts.

OUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James's Hospital, Ouseley-road, Balham, S.W.
WEDNESDAY, Feb. 22nd.—4 P.M., Major M. Sinclair: Radiographic Values in Bones and Joints. (Lantern demonstration.)

ATIONAL HOSPITAL, Queen-square, Bloomsbury.
MONDAY, Feb. 20th.—2 P.M., Dr. Hinds Howell: Out-patient Clinic. 3.30 P.M., Dr. Riddoch: Headaches: Their Causes and Treatment.
TUESDAY.—2 P.M., Dr. Walshe: Out-patient Clinic. 3.30 P.M., Mr. Armour: Head Injuries.
THURSDAY.—2 P.M., Dr. Kinnier Wilson: Out-patient Clinic. 3.30 P.M., Dr. Gordon Holmes, Pituitary Tumours (1).
FRIDAY.—2 P.M., Dr. Adie: Out-patent Clinic. 3.30 P.M., Dr. Martin: Muscular Atrophies.

OSPITAL FOR SICK CHILDREN, Great Ormond-st., W.C.
THURSDAY, Feb. 23rd.—4 P.M., Dr. R. Hutchison: Diet after the Period of Infancy.

OYAL NORTHERN HOSPITAL, Holloway-road, N.
TUESDAY, Feb. 21st.—3.15 P.M. (at the Royal Chest Hospital), Dr. P. Kerley: Intrathoracic Tumours.

ONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.
TUESDAY, Feb. 21st.—5 P.M., Dr. G. B. Dowling: Seborrhœa. Seborrhœic Dermatitis.
THURSDAY.—5 P.M., Dr. Haldin-Davis: Pruritus. Prurigo. Lichenification.

NTRAL LONDON THROAT, NOSE AND EAR HOSPITAL, Gray's Inn-road, W.C.
FRIDAY, Feb. 24th.—4 P.M., Dr. J. D. McLaggan: The Treatment of Chronic Suppurative Middle Ear.

. PAUL'S HOSPITAL, Endell-street, W.C.
THURSDAY, Feb. 23rd.—4.30 P.M., Mr. Kenneth Walker: Methods of Diagnosis in Renal Conditions.

OYAL INSTITUTE OF PUBLIC HEALTH, 37, Russell-square, W.C.
WEDNESDAY, Feb. 22nd.—4.30 P.M., Prof. J. E. W. MacFall: Some Aspects of Legal Live Birth.

ADWICK PUBLIC LECTURES.
THURSDAY, Feb. 23rd.—5.15 P.M. (in the Hastings Hall, British Medical Association, Tavistock-square, W.C.), Sir W. Heaton Hamer: Epidemiology: the Return of the Hippocratic Method.

EOPLE'S LEAGUE OF HEALTH.
WEDNESDAY, Feb. 22nd.—6 P.M. (at the Medical Society's Rooms, 11, Chandos-street, Cavendish-square, W.), Sir Robert Armstrong-Jones: Fatigue and Sleep.
FRIDAY.—6 P.M., Dr. Harry Campbell: Food of Mankind, Historically and Geographically.

. MARY'S HOSPITALS, Manchester.
FRIDAY, Feb. 24th.—4.30 P.M., post-graduate lecture (at the Whitworth-street West branch), Dr. Lapage: Tuberculosis in Infancy and Early Childhood.

NIVERSITY OF SHEFFIELD POST-GRADUATE CLINICS.
FRIDAY, Feb. 24th.—3.30 P.M., Mr. Kerr: Earache.

Appointments.

KE-ELDER, W. S., M.D. St. And., F.R.C.S. Eng., has been appointed Assistant Surgeon to the Royal London Ophthalmic Hospital.
CLES, W. MCADAM, M.S., M.B. Lond., F.R.C.S. Eng., Consulting Surgeon to St. Bartholomew's Hospital, and an Examiner in Surgery in the University of Glasgow.
WELL, B. WHITCHURCH, F.R.C.S. Eng., Honorary Orthopædic Surgeon to the Harrow Hospital.
tifying Surgeons under the Factory and Workshop Acts: CHAPELLE, E., M.B., Ch.B. Edin. (Tillicoultry District of Clackmannan); RUSSELL, W. F., M.B., B.Ch. Dub. (Holyhead); SCOTT, R. C., M.D., Ch.B. Edin. (Portree District of Inverness); and SHORE, P. A., L.R.C.P. L.R.C.S. Edin., L.R.F.P.S. Glasg. (Cannock District of Stafford).

Vacancies.

For further information refer to the advertisement columns.

ackburn County Borough.—M.O.H., &c. £1000.
otle Borough Hospital.—Sen. M.O. Also two Jun. M.O.'s. At rate of £150 and £125 respectively.
dford, Municipal General Hospital, St. Luke's.—H.P.'s. and H.S.'s. Each at rate of £200.
stol City and County of.—Chief Asst. M.O.H., &c. £800. Also Asst. M.O.H. £750.
Bristol Royal Infirmary.—H.P.'s, H.S.'s. Dental H.S., &c. Each at rate of £80.
Bury Infirmary.—Second H.S. At rate of £175.
Cancer Hospital, Fulham-road, S.W.—Surg. Reg.
Croydon Union.—Dental Surg.
Cyprus.—District M.O. £600.
Exeter, Royal Devon and Exeter Hospital.—Res. Cas. O. At rate of £100.
Hereford County and City Mental Hospital.—Second Asst. M.O. £350.
Hertford County Hospital.—Res. Surg. O. £250. Also H.P. At rate of £150.
Hong-Kong Government.—Radiologist Electrologist. £740.
Hospital for Sick Children, Great Ormond-street, W.C.—Asst. Pathologist and Research Fellow. £450. Also Jun. Cas. O. (part-time). At rate of £75.
Lambeth Parish Hospital, Brook-street, Kennington, S.E.—Jun. Asst. M.O. £200.
Leicester Royal Infirmary.—Two H.P.'s. At rate of £125.
Leicestershire County Council.—Asst. M.O.H., &c. £600.
Lincoln City, and County Borough of.—M.O.H. £1000.
Lincoln County Hospital.—Jun. H.S. At rate of £150.
L.C.C. Mental Hospitals Service.—Eighth Asst. M.O. £300.
L.C.C. Public Health Dept.—Temporary Asst. Aurist. 34*s.* 6*d.* per half day.
London School of Hygiene and Tropical Medicine, Malet-street, W.C.—Wandsworth Scholarship. £370.
London Temperance Hospital, Hampstead-road, N.W.—Res. M.O. At rate of £175.
Maidstone, Kent County Ophthalmic and Aural Hospital.—Ophth. H.S. At rate of £200.
Miller General Hospital for South-East London, Greenwich-road, S.E.—Hon. P. to Special Dept. for Children.
Nottingham and Midland Eye Infirmary.—H.S. £200.
Omdurman, C.M.S. Hospital.—Doctor required.
Plymouth, Homœopathic and General Hospital.—H.S. At rate of £100.
Prince of Wales's General Hospital, Tottenham.—Radiographer.
Queen Charlotte's Maternity Hospital, Marylebone-road, N.W.—Asst. Res. M.O. Also District Res. M.O. Each at rate of £80.
Queen's Hospital for Children, Hackney-road, E.—Res. M.O. £200. Also two H.P.'s. Each at rate of £100. Also Clin. Asst. 5*s.* per attendance.
Richmond, Surrey, Royal Hospital.—Jun. H.S. At rate of £100.
Royal Chest Hospital, City-road, E.C.—Asst. Tub. O. £600.
Royal Free Hospital School of Medicine for Women.—University Chair of Pathology. £1000.
Royal Naval Dental Service.—Five Dental Surgeons.
St. George's Hospital, S.W.—Asst. Radiologist. £100.
St. George's Hospital Medical School, Hyde Park Corner, S.W.—Research Worker. £500.
St. Giles' Hospital, Camberwell.—Locum Tenens Asst. M.O. £7 7*s.* per week.
St. John's Hospital for Diseases of the Skin, Leicester-square, W.C. Hon. Med. Reg.
Samaritan Free Hospital for Women, Marylebone-road, N.W.—H.S. At rate of £100.
Sheffield, Jessop Hospital for Women.—Asst. H.S. £100.
Tunbridge Wells and Counties General Hospital.—H.S. £160.
Western Ophthalmic Hospital, 155, Marylebone-road, N.W.—Sen. and Jun. Hon. Anæsthetist. £1 1*s.* per visit.
Whipps Cross Hospital, Whipps Cross-road, Leytonstone, E.—Asst. M.O. £300.
Willesden Municipal Hospital, Brentfield-road, Neasden, N.W.—Res. M.O. £150.
Woolwich and District War Memorial Hospital, Shooter's Hill, S.E.—Hon. Anæsthetists.

The Secretary of State for the Home Department announces a vacancy for a Medical Referee under the Workmen's Compensation Act for the districts of the Chester, Holywell and Flint, and Mold County Courts. Application for the post should reach the Private Secretary, Home Office, Whitehall, S.W. 1, not later than March 3rd.

The Chief Inspector of Factories announces the following vacant appointments for Certifying Factory Surgeons: Whitehaven (Cumberland); Chepstow (Monmouthshire); Clynderwen (Pembrokeshire); Montgomery (Mongomeryshire); Oakham (Rutlandshire); King's Lynn (Norfolk); and Newburgh (Fifeshire).

Births, Marriages, and Deaths.

BIRTHS.

ANDERSON.—On Feb. 11th, at a nursing home, Bedford, the wife of Dr. J. J. H. Anderson, of a son.
BURN.—On Feb. 6th, at Old Friars, Richmond, Surrey, the wife of Dr. J. S. Burn, of a son.

DEATHS.

BASCOMBE.—On Feb. 5th, at The Avenue, Colchester, Edwin Cecil Dare Bascombe, M.R.C.S., L.R.C.P. Lond., L.D.S. Eng.
BENNETT.—On Feb. 7th, at Morpeth-mansions, S.W., Francis Dillon Bennett, M.R.C.S., L.R.C.P., Chevalier de la Légion d'Honneur.
COHEN.—On Jan. 4th, at his residence, Macleay-street, Sydney, N.S.W., Algernon Aaron Cohen, M.D., M.R.C.S. Eng., in his 72nd year.
LLOYD JONES.—On Feb. 6th, 1928, at "The Lings," Radcliffe-on-Trent, Samuel Lloyd Jones, M.R.C.S., L.R.C.P., Medical Superintendent of the Notts County Mental Hospital for 19 years. During the war Lieut.-Colonel in the R.A.M.C.

*N.B.—A fee of 7*s.* 6*d.* is charged for the insertion of Notices of Births, Marriages, and Deaths.*

Notes, Comments, and Abstracts.

THE GORILLA'S BED.

Dr. N. A. Dyce Sharp, in a paper contributed to the *Proceedings* of the Zoological Society, Part 4, 1927, describes a habit of the great African anthropoids that has very rarely been recorded. Both chimpanzees and gorillas, he says, have a most human love for a bed. All chimpanzees sleep in trees 30 or 50 feet above the ground, where they make small untidy beds something like a stork's nest, but the male gorilla sleeps on the ground, and his bed is a far more elaborate affair. It is situated where he can see the nests of his wives and young offspring, whom he directs, according to some accounts, to their respective trees. Dr. Dyce Sharp found that he could always see the wives' beds from every old male's couch in which he had lain. Considering that no gorilla ever sleeps twice in the same bed, he goes to a great deal of trouble in making it. He selects carefully a site where he can break down several young saplings; over these he places stout branches brought from neighbouring trees, and covers this frame with a foot's thickness of twigs and leaves. The completed bed may measure 9 ft. by 6 ft., and always has a stout tree at one side of it, against which the gorilla may lean. The wives select a fork in the tree assigned to them, and make their beds with material from within reach. The only time a gorilla sleeps two nights in the same bed is when a newly born infant is too weak to hold on to the hair of its mother's chest. Dr. Dyce Sharp once came on a party which had been cut off on a small island during the rains. In spite of the confined space, they insisted on making themselves fresh beds each night, even though many of them were contiguous. The old male moved a few yards each night, while the females shifted to another fork of the same tree. The gorilla is a vegetarian and moves chiefly on all fours, so he does not resemble man very closely, except in this habit and in the length of his female's gestation period. Man, when living in the wilds, does not always insist upon a fresh bed each night, but it is recognised that the most efficient and best-adapted soldiers and travellers are those who expend what may seem a disproportionate amount of energy in making themselves comfortable at night. An appreciation of the value of sound sleep, and the necessity of evading enemies, are no doubt the basis of this queer instinct of the gorilla.

ILLUMINATION FOR HAND-TYPESETTING.

LAST year a report was issued on the optimum illumination required for typesetting by hand ("composing") in the printing industry. This was found to be approximately 20 foot-candles, an amount much higher than that usually found in printing offices at the present time. In that report no attention was paid to the almost equally important matter of distribution of the light over the working area. This is the subject of the present report[1] which compares the efficiency of different systems of lighting in common use. Local lighting by itself does not compare favourably with the other methods employed, the compositors finding the glare from the lamps very trying. A special local lighting fitting designed to eliminate glare is more accurately described as localised general lighting and the production, when this fitting was used, was practically equivalent to the average production with indirect lighting. It must be understood that the experiments were made with the same illumination on the working plane from each system tested. This was regulated to give about 10 foot candles—i.e., only about half the optimum—so as to allow for a rise as well as a fall in the efficiency of working. The general conclusion is that a considerable amount of general illumination in composing rooms is necessary to secure the best results. It is important to reduce glare, which is especially apt to be troublesome when the type is new. A combination of general and local lighting in which the two types of source will give approximately the same proportion of the total illumination is to be recommended. When glare from new type is complained of it is suggested that some method should be tried for partially ageing the type before it is put into use.

BENACOL IN THE TREATMENT OF PRURITUS ANI.

THIS distressing complaint, particularly common in private practice, is usually approached with apprehension, for the cause is rarely apparent. The majority of cases have already been examined in vain for hæmorrhoids, fissures, worms, excess of streptococci in the fæces, glyc uria, tabes, and a heterogeneous group of other kno causes, so that little remains but to treat symptomatica and in rare cases to cure permanently. Most ointme have already received a trial, and if X rays and radium h now failed, the physician may have to acknowledge that can do no more. Surgical measures include the inject of absolute alcohol at the muco-cutaneous junction, and excision of affected areas, Whitehead's operation. B these procedures necessitate general anæsthesia, the for perhaps on several occasions, and both may give relief a short time only.

According to three American authors[1] the injection benacol, which, they state, consists of "equal parts of pa amino-benzoyl-ethanol-benzoate and phenmethylol in eq parts of rectified sweet almond oil," may be helpful. T technique does not appear to differ from that advised the alcohol injections, but no anæsthetic is required, and treatment is quite painless if not more than 1–2 c.cm. oil are injected slowly. No complications were met w in 25 cases. A brief analysis of these, as regards sex, a duration of symptoms, and number of injections, is s mitted, and it arouses confidence to observe that no single cure is claimed. Two showed "very marked impro ment," while 22 are described as "improved," and one "slightly improved." A drug with this record deser very careful and prolonged trial, even though, as we susp the results are simply due to the contained phenyl radi and not to the complex structure of the whole molecul

THE NATIONAL CHILDREN'S HOME AND ORPHANAGE.

THE story of the fifty-eighth year of the National Childr Home is told in a little book et called "Builders of City," which is fully illustrated by photographs of childi great and small, at work and play. The examples of ca admitted during the year show that there is a refresh absence of red tape when the need is urgent. Nearly 20, children have been through the various branches, of wi there are now 30. The basis of organisation is the fan group, but the ten larger ones are self-contained li villages, containing between 100 and 300 children ea The Nautical School at Penarth prepares boys for the n and merchant service, and the Chipping Norton bra is a special home for crippled children. At Harpende a children's sanatorium, while there is a convalescent h at Ribblesdale. A new children's hospital at Highb provided by the gifts of the Young Leaguers' Union, started during 1927 and will be opened this year. As n of the hundreds of young men and women leaving the ho every year have no parents or friends to start them off in t careers, vocational training plays a large part, and they taught thoroughly the trade of their choice: bootmak carpentering, tailoring, baking, farming, or whatever may be. The report is in itself a fine tribute to the worl the children's home printing house. The girls are trainec shorthand typists, teachers, nurses, dressmakers, and in various branches of household work. At the end of year there were 3976 children under supervision, and 66 e grated to Canada during 1927. The dietary has been caref revised and brought into line with modern requirements.

THILOCOLOGNE.

THE advantages of starting induction of anæsthesia v a vapour that is not unpleasant to the patient are v obvious. For most people the very dilute vapour with wl an anæsthetist begins an open administration is efficien ensuring free and willing inspiration. It is not alw satisfactory, however, especially with young children, drips of pleasant scent of some kind or another are o used as a preliminary lure. Thilocologne, which is e chloride impregnated with eau-de-Cologne, offers a venient method of attack in these circumstances. ethyl chloride smell is effaced with remarkable success, spray smelling almost completely of eau-de-Cologne, at the same time the ethyl chloride's activity is not in fered with. The spraying nozzle is not as satisfactory some other forms, but this can doubtless be impro Thilocologne may be obtained from Messrs. W. Br 41, Great Tower-street, London, E.C. 3.

SAFEGUARDING OF KEY INDUSTRIES.

THE Treasury have made an Order under Section 10 of the Finance Act, 1926, exempting crude cocaine f key industry duty from Feb. 11th to Dec. 31st, 1928, continuing till the latter date the exemption from d (among other drugs) of barbitone, dial, didial, ethy bromide, furfurol, guaiacol carbonate, hydroquinone, tetra-ethyl, lipoiodin, methyl sulphonal, phenacetin, phe zone, phytin piperazine, pyramidon-veronal, salol, sulphonal.

[1] The Effect of Different Systems of Lighting on Output and Accuracy in Fine Work (Typesetting by Hand). By H. C. Weston, M.I.Inst.E., and A. K. Taylor, A.C.G.I., M.I.E.E., A.M.I.C.E. Joint Report of the Industrial Fatigue Research Board and the Illumination Research Committee. London: H.M. Stationery Office. 1928. 4*d*.

[1] F. C. Yeomans, R. V. Gorsch, and J. L. Mathesheimer, York Med. Jour. and Record, Jan. 4th, 1928.

The Influence
OF
PARTURITION UPON INSANITY AND CRIME.

An Address to the Medico-Legal Society, Feb. 23rd, 1928,

BY A. LOUISE McILROY, M.D., D.SC. GLASG.,
PROFESSOR OF OBSTETRICS AND GYNÆCOLOGY, UNIVERSITY OF LONDON (ROYAL FREE HOSPITAL).

SINCE the time of Hippocrates mental derangement has been recognised as one of the diseases of pregnancy and parturition. His case-book shows that his patients' symptoms were similar to those with which we are familiar.

For instance, Thasos who had a normal delivery became delirious on the sixth day. This continued until the tenth day when she had lucid intervals. On the eleventh day she recovered her memory, but quickly lapsed into acute delirium. About the fourteenth day she had much wandering, with lucid intervals, followed quickly by renewed delirium. Twentieth day, death. The wife of Epicrates had a normal delivery. On the second day she was seized with acute fever. On the seventh day she became delirious. On the tenth day delirium ceased. It returned on the sixteenth day and continued until the thirty-first day. On the eightieth day she recovered. Another lady, the wife of Dromeades, had similar symptoms and died on the sixth day.

It was not until 1922 that the Infanticide Act relieved the courts from the painful task of finding a verdict of murder against a woman mentally deranged by childbirth who kills her newly born child. I hope to show that the law requires further amelioration in kindred cases. The subject is one of no little importance. Puerperal insanity accounts for 10 per cent. of female lunacy, and we are painfully familiar with the all-too-frequent cases of infanticide and suicide that result from this condition. We also encounter other aberrations, such as indecent conduct and unconquerable aversion to husbands and relations. The records of Broadmoor [1] show that of the total female receptions from 1900 to1924, 42·8 per cent. were child murderers suffering from insanity associated with childbirth, the majority of the crimes being committed during lactation. There were in all 166 cases, about 7 per annum; 94 recovered, 10 died, 4 were transferred, and 58 remained in residence. It is hoped that, owing to antenatal supervision, improved obstetrics, and better care of the nursing mother, this form of insanity will tend to diminish.

THE GENERAL LAW.

To escape punishment a woman pleading puerperal insanity must prove (*a*) that she was suffering from the disease when she committed the offence, (*b*) that she was incapable of distinguishing right from wrong, or was under the influence of a delusion which prevented her from understanding at the moment the nature of the act she was about to commit. For instance, if she killed her child in a state of mania, she would escape under the first alternative of (*b*), because she would be incapable of distinguishing right from wrong. If she killed it under the delusion that it was a mad dog about to attack her, I assume she would escape under the second alternative. On the contrary, if she thought it would be better for the baby to leave this sinful world, and if she should strangle it, she would be responsible. In other words, the law assumes the delusion to be a fact, and if the fact would justify the act of violence then the prisoner would be entitled to a verdict of "Guilty but insane," [2] which results in the prisoner being detained during His Majesty's pleasure. This is provided for by the Criminal Lunatics Act, 1884. As many critics have pointed out, it is difficult to understand how a person can be both insane and guilty. Before the Act was passed, the practice was for the jury to bring in a verdict of "Not guilty on the ground of insanity," which seems more logical. It should be borne in mind that a verdict of "Guilty but insane" can be passed upon a person sane at the time of the trial. A prisoner who is admittedly insane when about to be tried is, of course, unfit to plead, and is therefore detained during His Majesty's pleasure—that is, until he recovers his reason and thus becomes fit to plead.

From this it is plain that a woman suffering from puerperal insanity who murdered her child knowing that she was doing wrong, would be liable to be convicted and sentenced to death for murder unless she were able to avail herself of the Infanticide Act which makes an exception from the general law. On the other hand, if she established a defence of insanity, she would be found guilty of murder, but insane, and locked up during His Majesty's pleasure, so that even in these circumstances she would suffer punishment of no light order. The Infanticide Act provides (Section I.):—

"where a woman by any wilful act or omission causes the death of her newly born child, but at the time of the act or omission has not fully recovered from the effects of giving birth to such child, and by reason thereof the balance of her mind is then disturbed, she shall, notwithstanding that the circumstances were such that but for this Act the offence would have amounted to murder, be guilty of felony, to wit, infanticide, and may for such offence be dealt with and punished as if she had been guilty of the offence of manslaughter of such child."

As a corollary, Section II. entitles a jury to find a verdict of infanticide where the charge is one of murder. In respect of a newly born child, therefore, the mother has a period of absolution. When that period has expired she is dealt with on the same principles as other persons charged with murder.

THE "NEWLY BORN" CHILD.

The Act requires two things—the woman must be mentally unbalanced and the child must be newly born. The absence from the Act of any definition of the term "newly born" has occasioned some discussion. In a case relating to a young woman named Mary Donoghue, heard last November (1927), the Court of Criminal Appeal, consisting of the Lord Chief Justice, Mr. Justice Avory, and Mr. Justice Salter, decided that a child more than a month old was not newly born within the Act.[3] Subsequently, when correcting a statement in a text-book, Mr. Justice Avory expressed the opinion that a child 3 weeks old did not come within the Act. We therefore do not yet know what constitutes a "newly born child" in law except that one more than a month, and possibly 3 weeks, old does not come within the category. In medicine the definition of a new-born child is somewhat vague. Obstetricians look upon the newly born or neonatal infant as one less than 10 days old. But this period is frequently extended to one month for purposes of mortality statistics and diseases. The convalescent period or puerperium of the mother normally lasts 8–10 days. At the end of this time the uterus has become reduced in size to a pelvic organ and the uterine discharge or lochia has ceased. The mother should therefore be normal, but convalescent. Ten days after parturition is usually the time agreed upon for discharge of patients from hospitals, homes, &c. In private practice nurses are engaged for one month—witness the term "monthly nurse"—to look after mother and baby till the end of this period. In no case is the infant looked upon as newly born after one month from birth. A woman ought to be fully recovered at the end of a month from delivery. This might well be the legal standard

[1] Stanley Hopwood: Jour. Ment. Sci., January, 1927.
[2] Bowler's case (1812), McNaghten's case (1843), Townley's case (1863), and Lord Hewart's recent paper on Criminal Law and Insanity (THE LANCET, 1927, ii., 1129).
[3] Weekly Notes, Nov. 19th, 1927, Cohen's Criminal Appeal Cases, xx., 113–136.

under the Act in its present form. The facts of the case of Donoghue before the Court of Criminal Appeal are of interest :—

The prisoner gave birth to an illegitimate child on the night of August 19th, 1927. She was removed to St. Pancras Infirmary, and there remained until Sept. 3rd, when she was discharged and took a room in the Euston-road. She lived there from the 3rd until the 21st, and while there obtained a situation as waitress in a hotel. She was to begin work on the 21st, and in the early morning of that day she strangled the child by tying a napkin round its neck. She then went to her work, and, upon information being given to the police, was arrested on the following day. In a signed confession she stated that she had killed her child "because," as she said, "I had nobody to mind him and no money."

The prisoner was convicted of murder and sentenced to death, but the sentence was commuted to one of penal servitude for life. I think the decision was right, apart from the newly born point on which it turned. Obviously the Act was not intended to apply to such a case, sad though it was. The prisoner was not suffering from mental derangement due to childbirth when she killed her child. As she herself admitted, her conduct was occasioned by conditions that might have operated with equal effect 12 months instead of five weeks from the birth.

Puerperal Insanity.

Nevertheless, the state of the law is most unsatisfactory so far as it affects cases of puerperal insanity, a term used to denote an abnormal mental state during pregnancy, labour, the puerperium, or lactation. The three chief forms are confusional, intermittent (manic-depressive), and dementia præcox. Latent tendencies are often stirred into action or precipitated by strain, exhaustion or septic intoxication due to pregnancy, labour, or lactation. The attack may come on at any time within at least six weeks after childbirth and may last for days, weeks, months, or even years. The nearer to labour and the more acute the attack, the more likely the patient is to recover quickly and completely. Usually the symptoms are those of the confusional type. The woman may kill her child, although in a dim fashion she may realise that she is doing wrong. She may go about her household duties in the ordinary way and then murder her child without any warning. She may not remember what she has done, and when made aware of her act may show great remorse.

If there is no hereditary taint the prognosis is good, except in the case of dementia præcox, which seldom completely recovers. The condition may, however, recur in subsequent pregnancies. The patient may suffer from delusions, hallucinations, usually of hearing or sight, and may have suicidal or homicidal tendencies, especially regarding the child. In acute cases, especially in mania, these are infrequent, yet it is a common working practice in nursing puerperal cases with mental symptoms that the infant should be at once removed from the mother and that she herself should be kept under constant supervision. After ten days, puerperal insanity is more likely to be melancholic, suicidal, and homicidal towards the infant. In cases of puerperal insanity it should be impossible to apply the ordinary rules relating to criminal acts by the insane. Apparently, as the law stands, a woman suffering from puerperal insanity who killed her child during the first day of its life, when presumably it would be regarded as newly born, would be guilty of the lesser offence of infanticide, whereas if she killed it when six weeks old she would be guilty of murder. Unless she could prove that she did not know that she was doing wrong or was under the influence of a delusion, she might be sentenced to death. To show the absurdity of the distinction, I will quote Mercier's graphic description of puerperal insanity.[4] He says :

"There is scarcely any desire which is stronger, under normal circumstances, than the desire of the mother for the welfare of her new-born infant. . . . Yet there are cases in which this primitive instinct seems to be reversed, and the place of love and self-sacrifice taken by a fury of destructiveness directed against the hapless child." [Incidentally it may be remarked that animals not infrequently destroy their young. Cats and tame rabbits are instances.] "It is a commonplace of alienism that the danger of insanity in childbed is, that the mother will murder her child. . . . The woman in the insanity of childbed is insane, not merely in her perverted desire to destroy her child, but in many other ways as well. The morbid craving to destroy her child is not an isolated manifestation, but it is a part of a very widespread and deep-seated disorder, which is so great, and so manifest, and is exhibited in so many ways, that the infanticidal propensity sinks into a subordinate symptom."

It will therefore be seen that the law is illogical and unjust. It must not be thought, however, that I am advocating the plea of uncontrollable impulse, so strongly condemned by Lord Hewart. With this I have no concern. This is not what is called a psychological question. My remarks are strictly confined to cases of mental derangement due to pregnancy and parturition, which have been recognised by the legislature as justifying special treatment. There can be no doubt that in making this concession Parliament acted in accordance with the feelings and desires of the community at large, displayed by the unwillingness of juries to convict in such circumstances. It may be alleged that the Act was intended to apply only to those cases in which a woman after giving birth to a child destroys it in a moment of mental anguish, although she knows she is doing wrong. If this reading of the Act is correct, it involves great injustice. Why should a woman who kills her child in such circumstances be treated with more leniency than one suffering from puerperal insanity who kills her child at, say, 6 weeks? To quote Lieut.-Colonel Lord [5]:

"Fear of exposure, shame, depression, even misery following the breaking of the moral law should not be confused with the symptoms arising from the disordered mind; such were the reactions of the normal mind—in fact, were direct evidences of it."

It may be said that the general law concerning acts by insane persons is a sufficient protection for sufferers from puerperal insanity. With all due respect I cannot concur in this opinion.

As stated in Taylor's "Medical Jurisprudence," [6]

"The murder of the child is generally either the result of a sudden fit of delirium or a sudden impulse with a full knowledge of the wickedness and illegality of the act. . . . Women have been known to request the attendants to remove the child and have afterwards taken an opportunity to destroy it. Such cases are commonly distinguished from deliberate child murder by there being no motive, no attempt at concealment, nor any denial of the crime on detection."

Puerperal insanity is a well-recognised disease of motherhood, just as much as puerperal sepsis, and should be treated accordingly. A verdict of infanticide is equivalent to one of manslaughter, so that the offender does not escape lightly. If the prisoner relied upon the general law, and succeeded, the verdict would be one of "Guilty but insane," which would for all time brand her as a murderess and involve her imprisonment, perhaps for a long period. Motherhood is a sacred and patriotic service, and no woman should run the risk of being branded as a murderess because she happens to fall a victim to one of the diseases incident to pregnancy.

Lactational Insanity.

The question is further complicated by the fact that puerperal insanity associated with crime most frequently occurs during the later periods of suckling, owing to physical and mental exhaustion. It occurs among badly nourished, overworked, and poorly fed women. It is due to the strain of

[4] Criminal Responsibility, Clarendon Press, 1905.

[5] Jour. Ment. Sci., July, 1927.

[6] Taylor's Medical Jurisprudence, seventh edition, vol. i., p. 881.

nursing, and many milder cases are cured by weaning and general treatment. It is usually melancholic in type; the patient has suicidal or homicidal tendencies, often on impulse. She may cut her throat or strangle or drown her infant. Many cases are difficult to cure and may end their days in an asylum. In criminal asylums a considerable percentage of women are incarcerated because of homicidal acts towards their infants or children due to lactational insanity. This may be due to the fact that during lactation there is less skilled and constant supervision than during the puerperium. It must be recognised that as the acute maniacal non-homicidal type is most common within 10 days of childbirth and the later melancholic, suicidal, homicidal type during lactation, no legal distinction should be made between the various weeks or months when the symptoms occur. Needless to say, a woman afflicted in this way has "not fully recovered from the effect of giving birth" to her child, to use the language of the Infanticide Act. Therefore, she should be entitled to the benefit of its provisions. If the law absolves the mother who commits infanticide upon her 10-day-old child, it should just as readily absolve the depressed mother, who, worn out by lactation, puts an end to her infant's life.

I claim that the words "newly born" should be deleted from the Act, subject to a proviso that its operation should be limited to a period of six or nine months from the date of birth. Unless unduly stretched, this change could not cover a case such as that of Mary Donoghue, but it would afford protection for mothers suffering from what the medical profession recognise as puerperal insanity, and it would also cover cases in which shortly after birth a woman, although not insane, kills her child in a moment of distraction. It is important to mark the difference between the two classes of case. Unhappily, the murder of infants is only too common, but they are usually killed either at birth or very shortly afterwards. Therefore, the extension of the period would in practice be limited to cases of puerperal insanity. I fully recognise that many infants are deliberately made away with and that nothing should be done to weaken the law in such cases. I also recognise that the Infanticide Act opens the door for untruthful excuses. At the same time it is terrible to think that a mother who has the misfortune to be afflicted with this dreadful disease through no fault of her own, and who has the further misfortune to kill her child as a result, should be liable to be convicted for murder, even if she escapes the death sentence by proving that she was mad when she committed the act. It may be said that there is little or no difference between puerperal and some other forms of insanity. I submit that for practical purposes this view is erroneous. Motherhood is a necessity for the race. It is the factor of motherhood that makes the woman insane and causes her, when suffering from a disease due to motherhood, to destroy her offspring. There is a marked difference between a murder committed by a person suffering from general paralysis or even paranoia, and one committed by a mother in the delirium of childbirth or exhausted by nursing.

From time immemorial, the "woman with child" has been singled out for special consideration and protection. The travail of childbirth is universally recognised as one of the greatest ordeals through which a human being can pass. A great part of modern effort is directed to the welfare of the pregnant woman and the care of her young offspring. Therefore, it seems amazing that our law should be in such an archaic state that a woman may be convicted of murder when she kills her child in a moment of delirium.

It will be seen, therefore, that the following points demand consideration: (1) The definition of the term 'newly born" under the Act. (2) Should the law be altered to give more extended protection to the parturient and nursing mother who, when suffering from puerperal insanity, destroys her child?

ADDENDUM.

Since writing the above paper my attention has been directed to a debate in the House of Lords on the Children Bill, 1908. Lord Loreburn, the Lord Chancellor, with the concurrence of the Home Secretary, proposed to insert a new clause providing that—

> Where a woman is convicted of the murder of her infant, and that child was under the age of one year, the Court may, in lieu of passing a sentence of death, sentence her to penal servitude for life or any less punishment.

In supporting the clause, he said that the passing of the death sentence in such cases was a mockery, as such a sentence had not been carried out since 1849. He thought that public opinion was shocked at the idea of the death sentence being passed in cases where it was manifestly inhuman to carry it out, and, on the other hand, it was very much to be regretted that the death penalty should be nominally inflicted when there was no reality behind it.

The clause was opposed by Lord Alverstone, then Lord Chief Justice, who, with the assent of most of the judges, objected to the option proposed by the clause on the ground that the death penalty should be maintained when infants were deliberately killed, and that in other cases it would not be right to place the judge in a position of having to exercise his discretion. He said, however, he would be glad to consider a scheme for the reform of the law whereby the difficulty indicated by the Lord Chancellor, the painful character of which he fully recognised, might be removed. Lord Halsbury opposed the clause on similar grounds. It was ultimately rejected by 42 votes to 36.

I must say I quite agree with this decision. I think the clause went too far, and that any change in the law should be limited to women who are mentally unbalanced owing to pregnancy, parturition, or lactation. In other words, the removal of the term "newly born" from the Infanticide Act, coupled with the proviso I have suggested, would meet the difficulties recognised by Lord Alverstone and the other speakers who opposed the clause.

An Address

ON THE

STATUS OF PATHOLOGY.

Delivered before the British Pathologists Association at their Annual Meeting at Bristol

BY CHARLES POWELL WHITE, M.D. CAMB., F.R.C.S. ENG.,
PRESIDENT OF THE ASSOCIATION.

I HAVE for many years been interested in the question of the status of pathology and the position of pathologists in relation to other members of the medical profession. My interest in the subject arose in the following way. When, in 1898, I was appointed demonstrator of pathology in a medical school, besides the ordinary duties of a demonstrator I had to carry out the diagnostic work for certain sanitary authorities. At that date this did not mean a great deal of work, being limited to the diagnosis of diphtheria and typhoid with occasional cases of plague, anthrax, &c. This outside work, however, acted as a tie so that I was placed in a position inferior to that of my colleagues in other departments. I could not, for instance, obtain the full advantage of the vacations and sometimes, when I took a holiday, I had to provide a substitute at my own expense out of a total income of £150 per annum. I felt that it was unjust that I, alone of all my colleagues, should have this outside work laid upon me without any extra remuneration.

A year or two before that time there was founded in Liverpool a Pathological Diagnosis Society, the

members of which, for a subscription of half a guinea per annum, could have an unlimited number of specimens examined, and reported on, at the laboratories of the University College. I protested against this scheme [1] on the ground that pathologists were consultants and, as such, were entitled to proper fees, and calling attention to the injustice of a surgeon, who might get a large fee for removing a tumour, being able to obtain a report as to its nature from a pathologist for about half-a-crown. This letter drew a curious reply from a medical man who thought that a surgeon would naturally get reports on his private specimens for nothing from the pathologist of the hospital to which he was attached. From a report of the Thompson-Yates Laboratories a year or two later it appears that the average fee per specimen examined under this scheme amounted to about 2*s*., so that in Liverpool the opinion of a pathologist was valued at about one-twentieth the value of the opinion of a physician or surgeon, without counting the expenses involved in the investigation. That is a good example of the contempt with which pathology was regarded 30 years ago. In 1900 I again drew attention [2] to the claim that pathologists ought to be regarded as consultants, and I protested against the way in which certain associations and societies were carrying out pathological work for fees which were wholly inadequate and without any restrictions as to the ability of the patient to pay the ordinary fee. Since then I have, from time to time, written other letters to the medical journals on similar lines. I have also tried to persuade the Pathological Society of Great Britain and Ireland to approach the universities with a view of inducing them to admit pathology as a subject for science degrees.

Status of Pathology as a Science.

This question has two aspects—viz., the status of pathology as a science and the status of those who practise clinical pathology. Let me here interpose a few words about the term *clinical pathology*. Some academic pathologists regard this term as a misnomer and claim that those who practise this branch of medicine should not term themselves pathologists. No doubt there is a difference between academic and clinical pathology, but the difference is no greater than that between pure chemistry and applied chemistry or between pure and applied mathematics. Academic pathology is a pure science and is concerned with the changes that take place in diseased organisms. Clinical pathology consists in the application of this science to the diagnosis and treatment of disease in individual patients. Clinical pathology must always be founded on a basis of academic pathology as are the various branches of applied chemistry on the basis of academic chemistry. All these branches of chemistry are, however, called *chemistry* however much that term may be qualified, and I see no reason why the term *clinical pathology* should not similarly be in use. Personally I think the term is a very suitable one because it clearly expresses what it means—namely, the application of pathology to clinical practice. It is an old-established term with a definite meaning, and it would be difficult to find a better one. The term *pathology* itself must embrace the whole subject of pathology and cannot be restricted to that part of it which is utilised in clinical practice. Those who practise this branch of medicine should call themselves *consulting pathologists*, or there is no reason why they should not employ the simple term *pathologists*.

Pathology has always been neglected by universities which, while providing special instruction and degrees in anatomy, physiology, &c., have restricted instruction in pathology to the amount which is required by the general medical student and have failed to make provision for those who wish to make pathology their life-work. When the University of London took over University College it refused to take over the department of pathology as an integral part of the College on the same terms as the departments of anatomy and physiology. Pathology is a science as much as any other branch of biology, and there can be no doubt that it is the duty of universities to provide special instruction in pathology as they do in other branches of science. There has been an improvement in this respect recently, and it is now possible to take pathology as a subject in Part II. of the Natural Science Tripos at Cambridge, and it is also possible to obtain science degrees in pathology at Glasgow.

Status of Those who Practise Pathology.

Just as universities have neglected pathology as a science so the medical profession has refused to recognise clinical pathology as a special branch of medical practice. Clinicians have tended to regard pathology somewhat with contempt as a subject fit only for the most junior member of the staff of an institution, and it used to be common to see advertisements of institutions requiring "fourth (or fifth) assistant medical officer and pathologist." Asylums were the worst offenders in this respect, and the junior member of the staff of such an institution could not obtain promotion without surrendering his occupation of pathologist. Such advertisements are not so common now as they used to be, but they have not entirely disappeared. There has, in fact, been a tendency for clinicians to regard pathologists as their servants rather than as their colleagues. The work of a pathologist has been regarded as consisting in the performance of certain tests required by the physician or surgeon, tests which, while demanding a certain amount of technical ability, are capable of being performed by junior and inexperienced men or even by laboratory stewards. You, who are engaged in the practice of pathology, know that there is much more involved than the mere performance of tests. Whilst there are some tests which are more or less mechanical and the results of which are not open to doubt, there is a greater number of cases the investigation of which requires jugdment and experience in addition to technical ability. The department of pathology which requires the greatest amount of experience is the histological diagnosis of tissues. While the actual preparation of sections is a purely mechanical procedure, judgment and experience are required in the selection of pieces for examination and still more in the interpretation of the sections when cut, yet there are some who seem to think that histological diagnosis can be carried out by bacteriologists and others who have had no special training or experience in histology. I have been engaged in histological work now for over 30 years and I still not infrequently come across specimens which I find difficult to interpret. It is not only in histology that judgment and experience are necessary. In all branches of clinical pathology doubtful or equivocal results are apt to occur and the pathologist has to make use of his experience in interpreting them. Clinical pathology thus does not merely involve the simple reporting of results which follow inevitably on the performance of certain tests; it also involves the giving of an opinion formed on the basis of experience.

Improving Position of Pathologists.

The position of pathologists has improved considerably of late years and clinicians are more ready than formerly to recognise them as colleagues of equal standing. There have always been some clinicians who did this, but their number was small compared with those who seemed to regard the pathologist as of inferior standing to the physician or surgeon. The position of a pathologist is a responsible one since on his report may depend the whole of the future treatment of the patient. The British Medical Association has lately been considering the position of pathologists and some important resolutions for improving the conditions of pathological practice have been passed by the Council and the Representative Body. A year ago a meeting was held in London, at the instigation of Dr. S. C. Dyke, to consider the position of pathologists, and at that meeting this association was

[1] Brit. Med. Jour., 1898 ii., 1786.
[2] THE LANCET, 1900, ii., 717.

formed. I think that we have reason to congratulate ourselves on the result of the year's work. We are now recognised as a body to be consulted on pathological matters. We have investigated the actual cost of, and the time taken by, the various investigations which have to be carried out by pathologists and have drawn up a rational schedule of fees based on these figures. We have also approached the various licensing bodies with a view to inducing them to institute courses of instruction and degrees, or diplomas, in pathology.

In the future there is bound to be a considerable increase in the number of men and women in practice as pathologists and the complexity of the activities of the pathologist increases every day. A pathologist has to be at once a morbid anatomist, histologist, bacteriologist, biochemist, and so on in addition to his qualifications as a medical practitioner. He has, in most cases, to work alone and has to carry out investigations in all these branches on his own responsibility. Apart from teaching centres there is little opportunity for team-work in clinical pathology and little opportunity for consultation with fellow pathologists. It is essential, therefore, that the pathologist should have adequate training and experience in all branches of pathology in addition to that which is sufficient for the general medical student. Hence some form of higher graduate or post-graduate training is necessary and also a considerable experience in a hospital laboratory.

Clinical pathology involves two kinds of procedure: (1) the examination of specimens sent to the laboratory; (2) consultations. The ideal procedure would be that the pathologist should meet the patient and the clinician in consultation and, after hearing the results of the clinical examination, he should decide what tests it is advisable to carry out and should give his opinion after performing these tests. This procedure, however, is not always necessary or practicable, and a large part of the practice will always consist in the examination of specimens sent to the laboratory. In this case it is essential that the pathologist should be supplied with full clinical details.

Types of Laboratory.

Laboratories of pathology are of several types: (1) private laboratories owned by the pathologist; (2) laboratories of clinical pathology belonging to associations of medical men or others; (3) hospital laboratories; (4) university laboratories; (5) commercial laboratories; (6) public health laboratories.

Of these different types the last two may be dismissed as wholly unsuitable. Pathological practice should not be subject to the control of commercial firms any more than clinical practice. Public health laboratories should be confined to public health work and should not undertake clinical pathology. Some people seem to think that because a man is a bacteriologist he is therefore qualified to undertake pathological work. This is not the case. Neither in public health nor in commercial laboratories is there the opportunity for gaining experience in pathological work which is essential for the proper practice of pathology, and I think that this association should oppose strongly any scheme which involves clinical pathology being carried out by such laboratories. Private laboratories owned by the pathologist present no difficulties. In some respects they are the ideal form of laboratory, but they are few in number and the expense involved in establishing them is prohibitive in most cases.

Most pathological work is carried on in hospital and similar laboratories by the pathologist attached to the laboratory. The details of the agreement between the hospital, or university, and the pathologist with regard to outside work differ in different places, but all such agreements should be subject to the following conditions:—

1. The pathologist in charge of a hospital laboratory should always have a seat on the medical board of the hospital and, if possible, should be allowed the use of beds for the purpose of keeping special cases under observation.

2. No university, hospital, or any other body owning a laboratory should itself arrange to carry on private work. Apart from research the university should confine itself to teaching and the hospital to the pathological work required for its patients. The hospital or university can, however, give permission to the pathologist to use the laboratory for private work. Every pathological report should be quoted as the report of the pathologist who is responsible for it and not as the report of the laboratory in which the work was carried on, and in all publications in which pathological work is mentioned full credit should be given to the pathologist. All arrangements for private practice should be considered as being between the pathologist on the one hand and the patient, through the intermediary of his medical attendant, on the other as is the case with other consultants.

3. All fees for outside work should be considered the property of the pathologist subject to reasonable charges for the use of the laboratory and apparatus, expenses, &c. The scale of fees to be charged should be decided by the pathologist. The fees should not be lower than those which would be charged if the pathologist had to bear all the expenses himself. No body owning a laboratory should make any profit out of the private work done by the pathologist. In the case of a laboratory owned by an association any dividends payable should be fixed and limited to an amount which would be a fair return for the capital involved.

The National Insurance Scheme.

All these points are of special importance at the present time in view of the probable inclusion of pathological benefit under the National Insurance Act, and the members of this association will have to consider very carefully the terms under which they will undertake such work. One scheme has already been started in this connexion. I do not know the exact details of this scheme, but it appears to be of an objectionable character. It is an arrangement between the insurance authorities on the one hand and a hospital on the other, the insurance authorities to pay a fixed sum per annum for an unlimited number of pathological investigations. In a subject like pathology, where there are so many kinds of investigations requiring very different amounts of time and skill, it seems to me to be very difficult to undertake such work on the basis of a fixed annual sum. If such an arrangement is made at all it should be made with the pathologist himself and not with a hospital.

It is distressing to find that the practice of clinical pathology, and other outside work such as public health bacteriology, by hospitals, universities, or similar bodies, is supported by some leading members of the medical profession and even by some professors of pathology, sometimes on the ground that it ensures an income for the laboratory. Such a practice is not carried out in any other university laboratory, and medical men would be up in arms if it were proposed to adopt a similar procedure in any other branch of medical practice. A short time ago attention was drawn to a scheme organised by a London hospital for undertaking pathological work for outside practitioners, and it was stated that the profits derived from this work would be devoted to reducing the fees charged. This seems to me to be a very questionable procedure. If a pathologist fixes his own fees he is doubtless at liberty to reduce them if he wishes to do so, but he runs the risk of the value of his work being assessed accordingly at a lower level. If, however, a hospital or other institution of good standing reduces fees it will generally be assumed that the fees formerly charged were unreasonably high. What it would really mean would be that the pathologist who worked the scheme would not be getting the amount of remuneration due to him. The fees charged by institutions for pathological work are already, in many cases, much too low.

This commercialisation of pathology is a disgrace to the profession as a whole and I am in hopes that the existence of this association will do something towards removing this disgrace and towards the universal recognition of clinical pathology as a distinct branch of medical practice of a standing equal to that of other special branches of medicine and surgery and governed by the same code of ethics.

BOVINE TYPE TUBERCLE BACILLI FROM SPUTUM IN PULMONARY TUBERCULOSIS.

AN ACCOUNT OF FIVE CASES.

BY W. T. MUNRO, M.D., M.R.C.P. EDIN.

(From Glenlomond Sanatorium, and University College, Dundee.)

With an Addendum by Dr. A. STANLEY GRIFFITH.

BACTERIOLOGICAL investigations show the infrequency of the bovine type of tubercle bacillus in the sputum of patients with pulmonary tuberculosis. Park and Krumweide in America have collected statistics of bovine infections, and could find records of only two cases of undoubted bovine type infections in 680 cases of pulmonary tuberculosis.

In England Stanley Griffith [1] has discussed the validity of the evidence upon which some of the accepted bovine types have been based. Griffith isolated tubercle bacilli of bovine type in three cases out of 275 and pointed out that before any bovine bacilli found in sputum could be accepted as proceeding from the lung there must be rigid precautions to exclude contamination of sputum with bacilli from milk or butter taken by the patient. Further, he emphasised that such bovine type must be obtained from sputa on several occasions.

The present writer, together with Dr. W. M. Cumming, now of Bradford City Sanatorium, in a paper [2] on the virulence of tuberculous viruses, discussed the determination of the bovine type by animal inoculation and relied on the intravenous inoculation of 0·01 mg. into rabbits of between 1000 and 1500 g. in weight. Bovine type bacilli invariably produced progressive generalised tuberculosis, fatal in about 30 days, while the same dose of human type never killed within 90 days. The same paper pointed out that there were relatively few organisms which were atypical either in growth or virulence. In fact the most notable feature about the two types is the uniformity of the type characteristics. Tubercle bacilli seem to retain their characteristics of growth and virulence in a way not usual with other organisms.

Table I. shows that bovine type bacilli are very rarely obtained from pulmonary lesions, that they are

TABLE I.—*Taken from Report of Proceedings of the National Conference on Maternity and Infant Welfare, held in London July 5th–7th, 1927.*

Variety of tuberculosis.	No. of cases.	Percentage of cases infected with bovine tubercle bacilli.		
		0–5 years.	5–15 years.	All ages.
Cervical gland	128	82·6	50·0	47·6
Lupus	168	62·5	53·2	52·4
Scrofulodermia	59	50·0	43·3	35·6
Bone and joint	541	29·4	18·6	18·7
Genito-urinary	23	—	—	17·4
Meningitis	100	22·8	15·1	19·0
Pulmonary	275	—	—	1·1
Post-mortem cases, L.G.B.	113	21·3	—	16·8
Total P.M. cases divided according to channel of entry:				
Alimentary	39		—	82·0
Respiratory	129		—	0·8

frequently obtained from glandular lesions, and that by selection according to age and lesions a distinct age- and tissue-incidence for bovine type infections can be shown.

[1] Griffith, A. S.: Further Investigations of the Type of Tubercle Bacilli occurring in the Sputum of Phthisical Persons, Brit. Med. Jour., 1914, i., 1171; Investigations of Strains of Tubercle Bacilli Derived from Sputum, THE LANCET, 1916, i., 721.

[2] Munro, W. T., and Cumming, W. M.: The Virulence of Tuberculous Viruses, Edin. Med. Jour., March, 1926.

Observations at Glenlomond Sanatorium.

In the past five years five cases at Glenlomond have coughed up bovine type tubercle bacilli. Controls of the virulence experiments have in all cases been done by Prof. W. J. Tulloch, University College, Dundee, and in four of the cases by Dr. Stanley Griffith at Cambridge. Two patients, who have since died, first came under my care in 1921.

CASE 1.—A man of 23 who joined the emergency forces in April, 1921, having never felt ill in his life; six weeks later he was coughing and spitting, and was sent to Glenlomond at the end of May, 1921. He looked decidedly ill and was found to have much disease down one side. No signs of cavitation clinically or by X rays. Muco-purulent sputum showed numerous bacilli. He improved steadily and in 18 months' time was discharged with negative sputum and went back to his work as a miner.

Cultures of T.B. were obtained from his sputum on several occasions, and were always bovine in type.

In January, 1927, he was again looking ill and worn. Examination showed extension of disease and growth of bovine bacilli in the sputum. He refused to come into hospital and died in May, 1927.

The results of the virulence tests of this organism were as follows: 0·01 mg. intravenously killed a rabbit on the thirty-fifth day, the autopsy showing generalised tuberculosis. 10 mg. inoculated subcutaneously killed a rabbit on the sixty-third day with generalised tuberculosis. The generalisation of the disease in both rabbits was short of that usual for infection with a bovine type virus.

CASE 2.—Woman aged 37. This patient had a much longer history of illness. She had had pneumonia in 1908, a mastoid operation in 1913, developed pulmonary tuberculosis in India in 1915, and an ischio-rectal abscess in 1916. She came home in 1918 and was admitted to a sanatorium in the North of England in 1919. She came to Glenlomond in September, 1921, with extensive disease of both lungs, and a discharging ischio-rectal abscess, but left without reason in May, 1922.

At that time the left lung showed extensive fibrotic changes, mostly basal; the right side had rather fewer signs. She died in a sanatorium in England on Oct. 11th, 1924.

Growth of virus from this patient was always dysgonic, but 0·01 mg. intravenously failed to kill the first rabbit inoculated and we killed it after 50 days. Autopsy showed numerous tubercles throughout the lungs, an enlarged spleen studded with tubercles, and many tubercles in the kidneys.

1 mg. intravenously killed a rabbit on the eighteenth day, the lungs being completely collapsed, and studded with tubercles. 0·01 mg. injected intravenously into a second rabbit killed it on the forty-sixth day. Autopsy showed progressive generalised tuberculosis, but not so marked as that observed with a typical bovine virus. 10 mg. injected subcutaneously killed a rabbit after 90 days, and autopsy showed general tuberculosis of the lungs, kidneys, spleen, and other organs.

The results of the virulence tests of this virus suggest that it was an organism with unusually low virulence towards rabbits for a bovine virus.

CASE 3.—A boy of 6, admitted to Glenlomond in January, 1924. He had had a cough for five months and had been in bed for two months with pleurisy of the left side. Examination showed both apices much retracted and the left base especially dull, with bronchial breathing and crepitations. Finger-tips were clubbed and the boy looked ill. He remained at Glenlomond till June, 1927. During the three years his disease showed various outbursts of activity, and the bony structures of the chest altered in contour, but he went home much improved, with no bacilli in the sputum, though he still had a cough, a very dull left base, and markedly clubbed finger-tips.

This virus seemed eugonic, but 0·01 mg. injected intravenously into a rabbit produced lesions much in excess of that usual for a eugonic virus. Growth from the kidney of the rabbit gave a dysgonic virus typically bovine in virulence and growth.

There is no doubt that this was a mixed growth, and that the eugonic element died out on subculture from the rabbit's kidney.

CASE 4.—A youth of 20 years, whose illness began in May, 1923, when he had "pneumonia and pleurisy," left side. He was admitted to Glenlomond in November, 1923. He was afebrile but looked blue, and examination showed considerable collapse of the left lung with weak bronchial breathing and a few crepitations, especially at the base. Throughout the next three years he developed various lesions. Abscesses appeared in connexion with ribs, and the left

estis became affected. This patient is still at Glenlomond, The non-pulmonary lesions are all dry, and the lung condi-ions remain much the same.

A dysgonic virus was obtained from sputum, abscess of b, and testis. Intravenous injection of 0·01 mg. killed a abbit in 35 days, the tuberculosis being general and rogressive.

This virus had the full virulence of the bovine type.

CASE 5.—A girl of 19 admitted to Glenlomond at the end f February, 1924. She had developed a cough in November, 923, and had pleurisy. Right side of the chest was aspirated rior to admission. On admission she looked ill, and the chest owed much dullness down the right side, especially at the ase, where the breath sounds were very weak. The left ase was impaired and showed bronchial breathing with an ccasional crepitation. The abdomen was tense and glands ould be felt, especially in the right iliac fossa. She had ightly hectic temperature and a pulse-rate of about 100. putum was negative on admission.

For the first year she did not improve much; the abdomen emained tender and an abscess appeared over a rib. This as opened, and dysgonic bacilli were obtained in pure ulture from the pus. Growth from sputum was finally btained and was dysgonic, and the virulence test with both iruses proved them to be similar bovine types.

At the end of a year this patient gradually began to mprove, and she left Glenlomond very well on June 30th, 926. She is now married and appears to be quite well.

The question that arises is: Why are bovine type acilli so rarely obtained from sputum? And it does ot seem possible to answer the question satisfactorily n the present state of knowledge.

Bovine type bacilli, and once both types, have been btained in eight instances from the tracheo-bronchial lands of children who have died from tuberculosis in) cases which have been investigated at Glenlomond. hese bovine bacilli must have traversed the lungs efore they reached the tracheo-bronchial glands, and n most instances there was plain evidence at the ost-mortem that the route of infection was by the bdominal glands. Some have maintained that ulmonary tuberculosis of the adult type is always nspired tuberculosis, due to the human bacillus. It not at all likely, however, that the virus was inspired n these five cases, and the history of Case 5 almost roves that the route of infection was abdominal.

The Allergic Reaction to Bovine Infection.

In only one instance (Case 1) were bacilli numerous, nd this is the only patient who showed the usual icture of chronic adult pulmonary tuberculosis of the lcerative type. The X ray of this case differed in o way from that of any ordinary case. Probably the nfection and disease were caused by massive doses of ovine bacilli.

In the other four cases bacilli were always scanty, nd clinically the lesions were more like those of a oot-spread tuberculosis. In three of the cases X ray ms showed the apices clear.

If one accepts the allergic theory of chronic pul-onary tuberculosis—i.e., that chronic ulcerative uberculosis is the result of superinfection with uberele bacilli—then such a chronic process must have een going on in the lungs of all these five patients. here is probably, however, a difference in the way in hich the tissues respond to the bovine and human ypes respectively. We must assume from the number f bacilli in the sputum of Case 1 that the superinfection this patient was the result of a massive dose of ovine type. Case 1 in no way differed from the rdinary case of chronic adult pulmonary tuberculosis, nd showed all along a tendency to ulceration, or, as rause [3] puts it, "central necrosis encroached on eripheral fibrosis." Is the bovine type, then, less rulent to the human subject than the human type, nd what is the allergic state—i.e., the state of esistance of the body—to the bacillus in each case? ere are four patients—three still alive—all of whom owed the root-spread type of disease. It is easonable to believe that there is a more active orotic change going on in the lungs of the patients ho are alive. It is quite possible that superinfection by the human type of bacillus leads to a more violent allergic reaction and more breaking down of tissues, a breakdown such as could only occur with bovine type if they were very numerous.

The allergic state of the patient has much to do with the fibroid character of lesions in the lungs. It is a stimulus to fibrosis if the response is not too severe. A severe response can be obtained by a virus of great virulence.

Experience suggests that there are two factors especially concerned in these bovine infections. One is that the bovine type is not so virulent to the human subject and in itself stimulates fibrosis, while the other lies in the allergic response of the host. This response is a proliferative one, particularly because the bovine type is not so destructive on an allergic terrain. In each of the last three cases any advance of disease in the lungs has only been a short excursion, and fibrotic changes seem to have kept pace with or even to have overtaken the advancing disease. If this reasoning is correct, then superinfection with the bovine type of bacillus leading to chronic ulcerative pulmonary tuberculosis is hardly possible unless the super-infecting dose is very large. That is to say, the allergy occasioned by a previous infection can protect against superinfection by the bovine type but breaks down before the human type of bacillus.

[3] Krause, A. K: Anatomical Structure of Tubercle, Amer. ev. of Tuberculosis, 1927, xv., 156.

OBSERVATIONS ON THE CHARACTERS OF THE TUBERCLE BACILLI FROM FOUR OF THE ABOVE CASES.

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Although bovine tubercle bacilli frequently give rise to tuberculosis in the human subject they have rarely been proved to be the cause of pulmonary tuberculosis. In my investigations of the type of tubercle bacilli occurring in the sputum of tuberculous patients I found bovine tubercle bacilli in only three out of 275 cases.

I was therefore much interested to learn that Dr. W. T. Munro, medical superintendent of the Glenlomond Sanatorium, Kinross, had obtained bovine tubercle bacilli from the sputum of five of his patients. At my request Dr. Munro kindly sent me cultures of four of these five sputum strains and also specimens of sputum from three of the patients. I have tested Dr. Munro's strains both culturally and by animal experiment and have also examined the samples of sputum for the presence of tubercle bacilli.

The following is an account of the results of my investigations:—

Examination of Cultures.

CASE 1. *Cultural Characters.*—The strain was dysgonic.

Virulence Tests.—One rabbit inoculated subcutaneously with 25 mg. of the culture died prematurely 27 days later; it showed only a moderate number of minute grey tubercles in the lungs and scattered tubercles in the kidneys, liver, and spleen. A second rabbit inoculated subcutaneously with 10 mg. was killed, when ill, 78 days after inoculation. The post-mortem examination showed local tuberculosis (i.e., a caseous local lesion and enlarged caseous scapular glands), moderate miliary tuberculosis of the lungs, mainly subpleural, and of the kidneys, caseous tubercles in the popliteal glands, and one or two doubtful foci in the liver.

Remarks.—The culture showed the growth characters of the bovine type of tubercle bacillus, but fell slightly below the standard of bovine viruses in virulence for the rabbit.

CASE 2. *Cultural Characters.*—The strain was dysgonic.

Virulence Tests.—Five rabbits were inoculated with the culture, two intravenously and three subcutaneously. The two former, which received 0·1 and 0·01 mg. respectively, died in 15 and 17 days of acute tuberculosis. One of the rabbits inoculated subcutaneously with a dose of 25 mg. died in 114 days of moderate general tuberculosis; the lung parenchyma was partly replaced by irregular caseating nodules and masses chiefly marginal and superficial; the kidneys were enlarged and closely beset with submiliary tubercles and contained also a few larger nodules of wedge-shaped form; there were tubercles in the popliteal glands and tuberculosis of the omentum, both wrist-joints, and some bones. The second subcutaneously inoculated rabbit,

dose 20 mg., was killed when ill, 121 days after inoculation, and showed slight marginal tuberculosis of the lungs, a moderate number of caseous tubercles in the kidneys, one minute focus in the spleen, tuberculosis of both carpal joints, and tuberculous subcutaneous abscesses of the legs. The third rabbit (R. 3097), inoculated subcutaneously with 20 mg., died in 97 days and showed, besides local tuberculosis, scattered miliary tubercles and some marginal caseous patches in the lungs; there were moderately numerous miliary tubercles in the kidneys, two minute foci in the spleen, and one in a popliteal gland; both testes and epididymes, as well as both eyes and lacrymal glands, were tuberculous.

Effect of Passage through the Rabbit on the Virulence of the Strain.—An emulsion of the lung of rabbit 3097 was inoculated subcutaneously into rabbit 3126. This rabbit died in 111 days, but showed only slight general tuberculosis. A culture from the kidney of rabbit 3097 was inoculated subcutaneously into rabbit 3151 (dose 10 mg.). The latter rabbit was killed 257 days later and showed local tuberculosis, slight tuberculosis of the lungs, and tuberculosis of one wrist-joint. A culture from the wrist-joint was dysgonic and was inoculated in a dose of 40 mg. into rabbit 3242. Rabbit 3242 died in 63 days and showed scattered miliary tubercles and a few nodules in the lungs and kidneys, caseous tubercles in the popliteal glands, and two minute tubercles in the spleen.

Remarks.—The culture was typically "bovine" in cultural characteristics, but fell distinctly below the standard of bovine viruses in virulence for rabbits. The virulence was not increased by passage through the rabbit.

CASE 3.—This strain grew luxuriantly on glycerine potato, in this respect resembling an ordinary eugonic human strain. The culture, however, inoculated subcutaneously into a rabbit in a dose of 40 mg. produced in 65 days moderately severe general tuberculosis of a type similar to that caused by bovine tubercle bacilli. Cultures from an axillary gland and the kidney nodule of the rabbit were dysgonic. After preservation in the incubator for some months the original strain yielded only dysgonic cultures, the eugonic element having apparently died out.

CASE 4. *Cultural Characters.*—The strain was dysgonic.

Virulence Tests.—A guinea-pig inoculated subcutaneously with the culture died in 47 days of severe caseo-necrotic general tuberculosis. A rabbit inoculated intravenously with a small dose died in 19 days of acute tuberculosis. An adult nanny-goat inoculated subcutaneously with less than 2 mg. of the culture died in 27 days; the post-mortem showed an infiltrating caseo-necrotic lesion, extensive caseo-necrosis of the prescapular gland, severe miliary tuberculosis of the lungs, and early tuberculosis of the thoracic glands. This strain was typically bovine.

Examination of Sputum.

CASE 3.—Two specimens of sputum were sent to me, one on Feb. 4th, the other on March 24th, 1926. Tubercle bacilli were not found in smear preparations and three guinea-pigs which were inoculated subcutaneously with the sputum remained healthy.

Some months previously Dr. Munro was successful in obtaining from the sputum a culture which he sent to me. The results of my examination are given under Case 3.

CASE 4.—On Jan. 27th, 1926, a specimen of mucinous sputum from Case 4, collected with precautions to avoid contamination with milk or butter, was sent to me. No tubercle bacilli were found in a film preparation of the sputum, which, however, produced general tuberculosis in two guinea-pigs inoculated subcutaneously. Cultures obtained from both these guinea-pigs were dysgonic and identical with the strain obtained by Dr. Munro.

A primary culture from one of the guinea-pigs was emulsified and inoculated subcutaneously into a rabbit which died in 52 days of typical severe general tuberculosis.

Thus two strains of tubercle bacilli, one of which was obtained 13 months after the other, from the sputum of a youth, aged 20 years, were identical in cultural characters and in virulence with tubercle bacilli of the bovine type.

CASE 5.—Specimens of sputum from this patient were sent to me on three separate occasions—namely, on Jan. 27th, Feb. 6th, and March 24th, 1926. No tubercle bacilli were found in film preparations, and none of four guinea-pigs inoculated with the sputum became tuberculous.

Summary and Conclusion.

Of the four strains of tubercle bacilli obtained by Dr. W. T. Munro from sputum three exhibited the cultural characteristics of tubercle bacilli of bovine type and one was eugonic, growing luxuriantly on glycerine potato and egg, like the human type of tubercle bacillus.

Of the three bovine strains two fell, one slight the other more definitely, below the standard of bovi viruses in virulence for the rabbit. The other w fully virulent for the goat, rabbit, and guinea-p A sample of sputum from the latter patient was se to me and I obtained from it, through the guinea-p a bovine culture which was identical with that isolat from the same patient by Dr. Munro.

The fourth or eugonic strain produced progressi "bovine" tuberculosis in a rabbit, the lesions of whi yielded only dysgonic cultures. On subcultivating t original culture, which had been kept for some mont in the incubator, I obtained only a dysgonic stra the eugonic element having apparently perished.

Although I was unable to separate out a hum tubercle bacillus, I have little doubt that the init luxuriant character of the growth indicated t presence of this type in the original culture obtain by Dr. Munro. The negative results of my examinati of two specimens of sputum showed either that t discharge of tubercle bacilli was intermittent or th the disease, whether of the lung or of the bronch glands, had become quiescent.

The results of my investigations of the cultures fr the sputum of four persons with intrathoracic tub culosis are in agreement with those obtained by I Munro.

TRANSPLEURAL EXPLORATION OF THE ŒSOPHAGUS.

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EVERY surgeon who explores a chest after artificial pneumothorax is struck by the remarka manner in which all the intrathoracic organs exposed. When one lung is more or less complet collapsed it is not in the least necessary to take a rib. By making a fairly long incision round the s of the chest between two ribs, cutting through t intercostal muscles and pleura, and by introduci one or two powerful rib retractors of the rack-ar pinion type, so as to force the two ribs apart, a la opening is obtained. Through this the whole ch can be explored, both hands can be introduced, a any necessary surgical procedure can be undertak The essential condition is that the lung should completely collapsed by artificial pneumothorax day or two before the operation. If the operation being undertaken for any non-pulmonary conditi the lung to be collapsed will probably be qu healthy; this can be easily and safely collapsed ir day or two by means of two, or at most three, insertic of gas.

Preliminary Collapse of the Lung.

After several explorations under these favoura conditions we were struck by the remarkably ea approach to the intrathoracic portion of the œsopha and by the possibility of removing a carcinoma by t route. Attempts have not infrequently been made remove œsophageal growths through the chest. nearly every case it has been done by the removal temporary resection of two or three ribs right at t back, approaching the œsophagus through the poster mediastinum after drawing aside and without openi the pleura. We have not found this operation ve satisfactory, either in the living or the dead. Shou it be possible to set free and excise a carcinoma of t œsophagus there will be a considerable risk of infecti

the surrounding tissues from the lumen of the tube, hatever procedure be adopted after the growth has een removed. In fact, this infection constitutes one the gravest features of the operation. If infection ust occur it would be better and less serious if it tually occurred in the pleura, where it can be entified and dealt with by ordinary surgical methods, ther than in the mediastinum, where its diagnosis difficult, its treatment impossible, and its prognosis most hopeless. This is the consideration which has iefly influenced our selection of a transpleural route r approaching œsophageal growths, but other nportant features are the extraordinarily free and sy exposure and the small amount of damage done. fter the intrathoracic procedures are finished the cision between the ribs is closed by two or three yers of sutures, and a few weeks after the operation, xcept for the scar on the skin, there remains nothing show that the chest has been opened. Above all ere is no bulging, deformity, depression, or weakness the chest wall.

Difficulty of Removal and Diagnosis.

Unfortunately very many carcinomata of the sophagus are close to the arch of the aorta and pidly become attached to it or to the bronchi; ese are most unsuitable cases for radical removal. he surgeon must also be prepared to find that many these œsophageal growths consist of a very much rger mass of tissue than might be expected from the sophagoscopic and radiological examinations. In one of the three cases here reported has it been ossible to remove the growth, on account of its tuation. The growths have been very easily exposed nd examined and none of the patients are in any way e worse for the operation or have caused any anxiety fter it. In one female patient the exploration proved at the diagnosis of carcinoma was incorrect, and this atient can therefore be said to have benefited greatly. o little disturbance does the operation cause that it eems justifiable to explore many more cases of sophageal carcinoma, especially those fairly low own, for it is only by this means that we can hope o come across them while they are removable and ossibly curable. As we have not so far been fortunate nough to encounter a successful case of resection of an sophageal growth, our object is simply to demonstrate e possibilities of the transpleural route.

In searching for cases of malignant disease of e œsophagus suitable for an external opera- on, and in which there is a prospect of cure, e surgeon is faced by two unfortunate circum- ances. The first is that growths of the œso- hagus, although common, are very rarely situated that part of the gullet most favourable for xcision—i.e., the section below the arch of the orta and above the diaphragm. Less than 2 per cent. f cases of malignant disease of the œsophagus show e ulcer starting in this neighbourhood. It is, owever, possible that some early cases of malignant isease of the cardiac orifice might come within the ope of operation by the transpleural route, and this a more common site of origin for carcinoma, for it mprises 20–30 per cent. of all œsophageal cancers.

The second adverse consideration is that a patient ffering from malignant disease of the gullet very rely experiences any untoward symptoms until the ew growth has been established for some time. resumably a carcinoma of the wall of the œsophagus very definitely localised for a varying period, and the state of affairs could be discovered early enough e prospect of a cure would be very much enhanced. nfortunately nothing can be done until the first mptom of dysphagia appears. X ray examination nd œsophagoscopy should be carried out on every atient who has even a suspicion of dysphagia lasting ore than three or four days. Although in one of the ses mentioned here there was an error in diagnosis, can be taken as a general principle that in the hands f an experienced surgeon an accurate diagnosis can e made, provided a thorough X ray and direct sophagoscopic examination is carried out. X ray examination alone is insufficient; many growths of the œsophageal wall which give rise to symptoms show no obstruction to the passage of opaque emulsion. Naturally these are the earlier cases, and therefore those most likely to give the surgeon a chance to remove them completely. Although an accurate diagnosis can be made, it is often difficult to tell the extent of the growth, and disappointments may be anticipated.

Three Cases Related.

CASE 1.—Male aged 45. Three months' history of increasing dysphagia. When first seen could only swallow fluids. The X ray showed a typical irregular stricture which seemed to be about two inches long, situated just below, but quite clear of, the arch of the aorta. Œsophagoscopy was performed and a growth found, of which the upper limit was 26 cm. from the upper incisor teeth in the direct line. This distance indicated that the growth was high enough up to be in contact with the arch of the aorta, but the X ray showed it so clearly below the arch that it was thought justifiable to attempt its removal. A portion was removed for microscopy and reported as squamous-celled carcinoma.

Gastrostomy was performed on April 30th, 1926, and thoracotomy, following artificial pneumothorax on May 14th, 1927. At this operation the growth was found tucked below the arch of the aorta, to which it was firmly adherent, and so it could not be excised.

In this case we had the kind assistance of Mr. W. G. Howarth.

CASE 2.—Woman aged 45. Two years' history of increasing dysphagia. The X rays showed an obstruction, apparently two inches above the diaphragm, suggesting an organic stricture rather than a spasm. The patient brought this X ray film from another hospital, and so a second X ray examination was not carried out. This was unfortunate, for it would have included inspection with the fluorescent screen, which would probably have disclosed the true condition.

Œsophagoscopy was performed and an obstruction found at 32 cm.—i.e., at a distance corresponding fairly accurately to the site of the stricture shown by X rays. No ulceration. ? Extra-mural neoplasm. Gastrostomy was not performed on this patient, but on thoracotomy no organic stricture could be discovered. When the patient had completely recovered from the effects of the operation it was found that her swallowing was almost normal, and on X ray screening no œsophageal obstruction could be seen.

This result makes one wonder to what extent, and why, actual benefit is derived in these spasm cases from forcible dilatation of the cardia.

CASE 3.—Man aged 50. One month's history of increasing dysphagia. On X ray examination a shadow was seen round a stricture just above the diaphragm. Diagnosis of new growth involving the cardia. Œsophagoscopy not done.

A gastrostomy was performed, and six weeks later the thorax was opened in the usual way and a large mass found involving the œsophagus just above the diaphragm. The diaphragm was incised, the peritoneal cavity opened, and the growth was found to be more extensive below than above, and to run right on to the stomach.

Case 3 is an example of the good and easy approach to the upper part of the abdomen supplied by the transpleural route with a collapsed lung. This method is, of course, well recognised, but seldom employed. We have found it a valuable route for approaching the right suprarenal body and the upper part of the stomach.

In all these cases Dr. G. T. Hebert was kind enough to do the preliminary collapse of the lung for us.

A MINERS' HOSPITAL.—Eleven years ago the Castleford (Yorkshire) Amalgamated Friendly Societies adopted a suggestion that a maintenance fund for the provision of a cottage hospital should be created by the contribution of a penny a week from the wages of their members. The idea was readily taken up by the miners at the large collieries in the district, and the total contributions now exceed £46,000, which includes £16,000 in large sums given for memorials. The building at Hightown, Whitwood, which, with the site of 11 acres, has cost about £38,000, is now completed. Accommodation is provided for a minimum of 38 beds in four wards, and the equipment is thoroughly modern. Over 18,000 miners and others have made weekly contributions.

EPIDEMIC JAUNDICE IN THE ANDAMAN ISLANDS.

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Barker [1] has given an excellent description of epidemic jaundice in the Andaman Islands. The history starts with an account by Chowdry [2] of 588 cases of jaundice and fever, with a mortality of 13·26 per cent., between 1892 and 1901. These cases were apparently indistinguishable from true Weil's disease, except that the onset was not sudden. The patients had nearly all been working in the paddy fields or in the swamps in the jungles. Woolley [3] recorded 40 cases with a 40 per cent. mortality. These cases also were almost all derived from men who had been working in swampy ground. Barker recently recorded several cases which occurred in 1921, and 24 more in the two subsequent years, with a mortality of 24 per cent. for the three years. These were followed by 22 more cases in 1924 with four deaths.

From the symptoms recorded there is nothing definite to distinguish this disease from true Weil's disease. Barker found organisms morphologically resembling *Leptospira icterohæmorrhagiæ* in the urine of three cases, and in liver smears from one fatal case. Numerous guinea-pigs were inoculated with urine and blood from the patients, but none of the animals developed any apparent disease. Barker concludes that the proof that the disease is due to leptospira is incomplete.

Serological Investigation.

During 1927 Dr. H. B. Newham very kindly handed over to me the serum of a case sent from the Andamans by Major J. M. R. Hennessy. This was tested for presence of agglutinins against a London human strain of *Leptospira icterohæmorrhagiæ*, according to the technique of Martin and Pettit.[4] Positive and negative control sera were used; the result of this serum, taken on the twelfth day of disease, was absolutely negative. It is true that this would be somewhat early to expect agglutinins to be present. A portion of the serum was activated by the addition of fresh guinea-pig's serum and adhesion phenomenon tested (Brown and Davis, 1927).[5] This was also negative.

Dr. William Fletcher kindly procured from Prof. W. Schüffner several strains of leptospira from Sumatra, also certain Dutch strains, and shortly after the arrival of these a second batch of sera from the Andamans arrived. The serum from one fatal case, No. 46952, taken on the nineteenth day of disease, was tested by the adhesion phenomenon against the following strains: (1) London human, (2) Moné (a typical Weil strain from Holland), (3) Salinem from Sumatra, (4) Rachmat from Sumatra, (5) Deli A (identical with Rachmat) from Sumatra. With the last two—viz., Rachmat and Deli A, there was a definitely positive result, but the serum was absolutely negative with the other strains. When tested for agglutinins against the London human, Salinem, Moné, and Deli A, only the Deli A strain was agglutinated.

On another occasion the serum of a fatal case, No. 34473, taken on the seventeenth day of disease, was tested by the adhesion phenomenon against (1) a London human strain, (2) a London rat strain, (3) Moné (a typical Weil strain from Holland), (4) Ht (a typical Weil strain from rat, Holland), (5) Rachmat from Sumatra, (6) Salinem from Sumatra, (7) Deli A from Sumatra. The adhesion phenomenon was definitely positive with strains Rachmat and Deli A, and absolutely negative with the remainder. There was not sufficient serum available from th case for the agglutination reaction, and, as the seru itself was toxic to leptospira, it had to be dilute Fresh guinea-pig's serum was added to the dilute patient's serum to activate it.

Identification of the Andaman Organism.

It appears, therefore, that the organism responsib for jaundice in the Andamans is serologically identic with the Rachmat and Deli A strains, and not wit the Salinem strain. Schüffner and Mochtar,[6] in a exhaustive inquiry into the serological relationshi of these various strains, have shown that the Saline strain from Sumatra is serologically distinct from th Rachmat strain, but that the latter is identic from a serological point of view with one huma strain, B.G.O., and two rat strains from Holland These findings explain the fact that the results of th agglutination and adhesion tests between the firs serum sent last year and the London strain wer negative. As the supply of sera was distinctly limited agglutination tests with a greater number of strain was not possible.

Whilst these serological tests were being performed Dr. A. C. Stevenson examined sections of the kidne and liver of No. 46952 and reported as follows:—

Liver.—Some slight degeneration, but nothing ver typical of Weil's disease. Some polymorphonuclear leuco cytosis.

Kidney.—Marked general parenchymatous nephriti localised areas of suppuration, the tubules being distende with pus. This is possibly due to extensive infection by bacillus which is probably a spore bearer. When stained b Levaditi's method, spirochætes are found mainly in tw positions. Many of those found in the cells and in the lume of the straight tubules are morphologically indistinguishabl from leptospira. Others found, occasionally in considerabl numbers, in masses of material staining homogeneously i convoluted tubules seem to be definitely of a differen type, more resembling *S. recurrentis*.

It is interesting to compare the observations o Vervoort [7] who found coarse spirochætes together wit leptospira in the cultures and ascitic fluid of guinea pigs inoculated with the blood of patients sufferin from dengue-like fevers in Sumatra. Knowles, referring to tissues sent to him, says: "Sections o liver and kidney tissue from such cases, stained b Levaditi's method, have been received from th Andamans. These show undoubted leptospira, an the epidemic jaundice of the Andamans must now b considered to be Weil's disease."

We are, therefore, in a position to conclude that th epidemic jaundice of the Andamans is due to a lepto spira which is serologically identical with the Rachma type from Sumatra. Although the Rachmat strai was isolated (Wolff [10]) from a comparatively mild cas with injection of the conjunctiva but no generalise icterus, the mortality in Deli amongst cases with icteru has been recorded (Kouwenaar [9]) as 20 per cent., an Schüffner has found the strain Rachmat to be sero logically identical with Deli A.

I wish to express my thanks to Dr. Newham fo allowing me to investigate the sera in question, an to Prof. Schüffner and Dr. Fletcher for providing m with the necessary strains of leptospira.

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Clinical and Laboratory Notes.

NOTES ON THE TREATMENT OF HYPERPIESIS.

By William Bain, M.D. Durh., F.R.C.P. Lond.

Most writers on hyperpiesis suggest that the cause is some toxin circulating in the blood, but about its chemical characteristics they are discreetly silent. Some years ago I found pressor bases in normal urine.[1] They were adsorbed by charcoal and thence removed by heating with dilute hydrochloric acid. The first base was extracted by ether after the filtrate was rendered alkaline with sodium hydrate. After the removal of this base the residue was re-acidified with dilute hydrochloric acid, and having been made alkaline with sodium bicarbonate was extracted with amylic alcohol. We used 130 litres of normal urine in order to obtain quantities sufficient for identification. The first was identified as isoamylamine.[2] The second base could not be identified, as the amount was too small, but it gave a curve very similar to that of p-hydroxyphenylethylamine.

Some years ago I showed that the pressor bases were absent from the urine in most cases of high blood pressure; in a few patients whose systolic pressure was about 180 mm. Hg they were greatly reduced in amount. It is therefore reasonable to assume that their retention in the organism is the cause of hyperpiesis. Why they are not eliminated is a matter of conjecture. A probable explanation is some renal defect, either a functional impairment or the beginning of organic change; but a test to demonstrate this supposed defect is badly wanted. The present renal efficiency tests are not positive unless there are definite pathological lesions of the kidney, and in an early case of hyperpiesis these histological changes have not had time to develop, and therefore it is highly desirable to devise a test that will detect the first approach of renal trouble. The estimation of the urinary pressor bases by the charcoal method is far too laborious, and is utterly unsuitable for clinical purposes.

There are two criticisms of the otherwise excellent urea-concentration test: first, that it cannot detect renal inefficiency until kidney disease is somewhat pronounced; and, secondly, that the rate of absorption may vary in different individuals.

Since the amount of isoamylamine is much larger than any other pressor base in normal urine, its retention in the body plays the chief part in the causation of hyperpiesis. Until we find a chemical agent that will combine with isoamylamine to produce a non-toxic substance which will be excreted by the kidneys we must rely upon palliative measures which may reduce the high blood pressure more or less temporarily. The first and the most important is diet. Since isoamylamine is derived from putrefactive nitrogenous material, beef, mutton, veal, and lamb should be prohibited, but eggs, fish, and fowl may be allowed, because they only raise the blood pressure to a moderate extent. Meat extracts should be absolutely forbidden. Vegetables and fruit have no effect whatever upon the blood pressure. The diet should be considerably restricted in those who lead sedentary lives. Abelous, of Paris, and I, using different methods, obtained exactly the same results regarding the various foodstuffs. In sketching out a diet list it is advisable to ascertain the idiosyncrasies of the patient, as flatulent dyspepsia tends to increase the blood pressure.

Plombières douches in cases of catarrh of the colon produce a diminution of the pressure, probably because they remove putrefactive material.

The high-frequency current has also a depressor effect in hyperpietics, but not in normal subjects. It is supposed to increase metabolism.

Stimulation of the liver by liver packs or by cholagogues lowers the blood pressure in cases of cholecystitis. It has been demonstrated that a normal liver will destroy isoamylamine, and feeding animals with this substance does not produce any pathological change in the vascular system.

Massage under warm water, such as the Harrogate massage douche, without abdominal massage or the needle douche, has a distinct effect in reducing the blood pressure and is particularly refreshing. In some cases Nauheim baths have a slight reducing effect; in others no appreciable lowering of pressure results.

Rest and the avoidance of worry and excitement tend to quieten the nervous system. We know that mental strain sends up the blood pressure. A moderate amount of exercise such as golf (nine holes) or walking is beneficial. After exercise a warm bath is desirable (patients should not stay in it longer than two minutes at a temperature from 94° to 98° F., and should immediately afterwards dry thoroughly with a warm bath sheet). I usually advise patients with a diastolic pressure of 120 or over to stay in bed one day a week.

Dr. Herbert French informed me that he got excellent results by venesection, which the late Sir Clifford Allbutt also recommended. The withdrawal of about a pint of blood twice a year probably benefits plethoric patients, but in thin delicate individuals it is contra-indicated.

Depressor drugs have merely a transient effect, but a chemical agent that will adsorb putrefactive bases from the alimentary tract may prove successful. If the systolic blood pressure is over 200 mm. Hg it is as a rule advisable to give erythroltetranitrate for several days before beginning hydrotherapeutic measures. It has already been stated that any form of excitement may tend to put up the pressure considerably, and there is a certain amount of apprehensive tension associated with bathing procedures that the patient has not hitherto experienced; hence the desirability of prescribing a drug which will lower the blood pressure before subjecting the patient to a new form of treatment that may have an exciting effect.

Quite recently I have tried animasa tablets, with encouraging results. In two cases neither waters nor baths were used, and the result was a moderate reduction in pressure. In other cases I gave the tablets when the patients were having Plombières douches or electric massage, and it seemed to me that the reduction in blood pressure became more marked.

[1] The Lancet, 1909, ii., 365; 1910, i., 1190; and 1911, i., 09.

[2] Quart. Jour. of Exper. Phys., 1914, viii., 229.

AN OUTBREAK OF PARATYPHOID B FEVER.

By Iris V. I. Ward, M.B., B.S. Lond.,
HOUSE SURGEON, WEST HERTS HOSPITAL, HEMEL HEMPSTEAD.

In a recent paratyphoid B epidemic in West Hertfordshire 140 cases were notified. The source of infection was traced through a dairy to a small farm where a child, aged 3½ years, supposedly ill from broncho-pneumonia for some time, was found to have a strongly positive Widal reaction to paratyphoid B. Her mother, who handled the milk, had a positive Widal and paratyphoid B bacilli were isolated from the stools. She denied any illness and affirmed that her health was as usual except for a painful, red, œdematous swelling of the left breast. The swelling was aspirated and thick creamy sterile pus was withdrawn. She gave a history of recurrent discharge from the left nipple during menstruation, although the nipple was healthy and lactation had not occurred for three years. The infected milk was, apparently, sent in churns to a large distributing dairy and thereafter supplied to two districts which suffered heavily. The greater area supplied by the same dairy practically escaped infection.

On Saturday, Nov. 12th, the West Herts Hospital admitted 23 cases. The total accommodation normally is 108 beds and of these only five were available. A detached wing ward was emptied and prepared for the reception of 40 patients. The male and female ends of the ward were put in charge of staff nurses and the whole unit was run as a separate hospital section in charge of the ward sister. By the 16th 42 cases had been admitted; their ages ranged from 6 weeks to 47 years.

Children (23 cases).—Aged 6 weeks: 1 female; aged 1¼ to 4 years: 10 females, 7 males; aged 8 to 14 years: 1 female, 4 males.

Adults (19 cases).—Aged 15 to 47 years: 11 females, 8 males. None of these cases had been inoculated.

Incubation Period.—On one occasion only the incubation period was definitely established as ten days.

An infection of great interest is that of the baby, aged 6 weeks.

Mrs. H., on Oct. 21st, gave birth to a full-term healthy female child. The puerperium was uneventful until Nov. 2nd, when the evening temperature was 99° F. Next day the temperature rose gradually to 101° at 2 P.M. and 103° at 6 P.M. On the 5th the temperature was 105° and breast-feeding was discontinued, but the baby was not removed from the mother. On the 10th a diagnosis of paratyphoid fever was made and the mother was isolated. On the 30th the baby became ill with a rise of temperature and bronchitis, followed in a few days by a fairly profuse and typical rash. This was 20 days after isolation from the mother and 25 days after the cessation of breast feeding.

The important points about the case are: (1) the age of the child; (2) the fact that it was breast-fed for three days during the septicæmic stage of paratyphoid fever without contracting the disease from this source.

Onset.—In adults, on the whole, the onset was insidious with headache, epistaxis, abdominal discomfort, and diarrhœa. Headache was severe in adults, lasting about one week. In children the onset was more sudden with abdominal pain, high fever, and diarrhœa. One child, previously well, ran in from play screaming. For the next few days she had short periods of blindness, and on admission lay curled up on her left side with slight head retraction, resenting all interference—a typical picture of cerebral irritation. Another child, an epileptic, not included in the series, started the disease with an epileptiform convulsion. Epistaxis was fairly common as an initial symptom among adults. One boy, aged 14, had a severe epistaxis. Vomiting was not a prominent symptom either at onset or during the course of the disease. Delirium occurred in one case only. Catarrh was common as an initial symptom. One of the earliest cases started with signs of congestion at the left base. Two boys had irritating coughs, but no signs in the chest.

Rash appeared about the tenth day and was very profuse on chest, abdomen, flanks, and arms and legs, and in one case on the neck. Successive crops of spots appeared over a period of seven to ten days. Rash was particularly profuse in children.

Progress.

Temperature very high and swinging, particularly in children, in whom it commonly varied between 103° and 104° in the evening and 98° or 99° in the morning and persisted for a week to ten days. Fall of temperature occurred by lysis in majority of cases at end of third week.

Toxicity was extreme in children.

Bowels.—After the initial diarrhœa, which lasted a few days, constipation was the rule except in five children and two adults. In the children the stools were green—not the characteristic "pea soup" stools of typhoid. Sloughs were found in the stools in one case only—that of a child of 2½ years.

Complications.—Chiefly respiratory. Broncho-pneumonia in three children. One boy, who started the illness with congestion at the left base, developed a severe and persistent bronchitis. There were boils and abscesses on head and buttocks in two children. Myalgia: In intercostal and abdominal mucles in one boy. Acute gangrenous appendicitis: One man admitted with history of shivering, abdominal pain, headache and backache for five days. Temperature 102°; pulse-rate, 96; respirations, 24. Extreme tenderness and rigidity in left iliac fossa. Operation same night; gangrenous appendix removed. Temperature remains high (102°) for following three days. Abdomen satisfactory. On fourth day after operation a profuse rash appeared on abdomen and Widal was positive to paratyphoid B. Further progress was uneventful. Acute gangrenous appendicitis has been known to occur before as a complication of typhoid fever.

Acute nephritis.—Male, aged 34, was taken ill on Nov. 9th and admitted to hospital on Nov. 23rd with a typical ras Temperature was normal. Progress was satisfactory un Dec. 3rd, 1927 (twenty-fourth day of disease) whe temperature rose suddenly to 101·2° and was accompani by headache, hæmaturia, and albuminuria. There w no œdema. The daily output of urine was ℥ xv. on average and *B. paratyphosus* B were cultivated from t urine on Dec. 6th. Temperature remained high and ran typical typhoid course for three weeks. Hæmatur persisted for one week. The urine was negative *B. Paratyphosus* B on Jan. 5th, 1928. There was still slig albuminuria on discharge on Jan. 7th. Perforation: Non Intestinal hæmorrhage: Occurred on two occasions at t end of the second and beginning of the third weeks of illne in a child aged 2½ years. It was fairly profuse, but yielde to treatment readily. There were no sequelæ or relapses

Notes on Carriers.

Of those who actually had the disease, one woma who started a moderately severe attack on Nov. 1s is still passing paratyphoid bacilli in her stools i.e., 12 weeks after the onset. Intestinal antisepti have been of no avail.

A very disquieting feature of the epidemic was th routine examination of the roundsmen at the dai showed that six, apparently well, were carrier paratyphosus B were cultivated from their stools an on one or two occasions, from the urine. It is inco ceivable that these six men, the majority of the dai staff, could have been carriers prior to the epidem and we may safely presume that they became carrie by infection from the milk which they handled a drank. We may further presume that many in t district who did not show clinical signs of the disea were also infected and were potential carriers. would be irksome and very costly for the heal authorities to examine all the men, women, a children who had drunk infected milk and to ascerta whether they were carriers or not. Amongst thc who have clinically developed the disease the carri can be recognised, but of the vast number who ha been infected and have either not developed the dise or have had a mild unrecognised attack nothi whatever can be known.

Would it not be better, therefore, to protect community by widespread inoculation, either by t subcutaneous method (which in this case would impracticable and very expensive), or by Besredk method of oral administration of vaccine? Bo these methods have proved effective in the armi The latter method is easy, effective, and practica in a situation such as this. The expense is trivi In Africa the natives have been protected in t way at a cost of 4*d.* per head. Carriers cannot prevented and often cannot be cured. Much pub money is spent in trying to deal with the probl indirectly that ought to do much to rid our coun of enteric if spent in immunisation of districts wh that disease sporadically recurs.

I am indebted to the honorary staff of the W Herts Hospital and to the medical officer of hea for Hemel Hempstead for permission to publish th cases.

A CASE OF EARLY TROPICAL ELEPHANTIASIS TREATI BY PROTEIN SHOCK.

By W. E. Cooke, F.R.C.S. Irel., D.P.H.,
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The geographical distribution of the *Filaria bancrofti* corresponds with that of tropical elephantia Other arguments can be advanced to show that elephantiasis follows the filarial infection, and absence of microfilariæ from the blood stream patients who exhibit elephantoid deformities is n accepted as usual and does not rule out the fila origin of the disease. The factors leading to elephantoid changes in the tissues are not definit

known, but most authorities are agreed that in addition to lymphatic obstruction bacterial infection is necessary.

The treatment of elephantiasis is not satisfactory and is dependent mainly on the region implicated. Rest, elevation and support of the parts, massage, vaccines, light, and surgery all have to be tried, and often the condition continues to advance despite all these means. Preventive measures must be directed against the preliminary filariasis, for which unfortunately no effective treatment has yet been evolved. Recognising the success attending "protein shock" treatment in other tropical diseases where bacterial infection is present, and accepting the probable contributory bacterial factor in elephantiasis, I determined to try this mode of treatment on the next favourable case arriving in hospital.

The Case Related.

The patient was 26 years of age and was born in India of white parents. At the age of 18 she came to England for three years, then returned to India till 1927, when she again came to England. Previous illnesses: measles, tonsils and adenoids stated to have been removed in childhood, malaria, mumps, influenzal pneumonia, diphtheria, and dengue.

During the voyage home her right leg became red, painful, and swollen. There was no history of injury. The ship's surgeon treated it with fomentations and rest, and some improvement took place, but walking at Port Said caused a relapse, the swelling increasing and appearing above the knee. The limb was also painful to touch.

On arrival at the Hospital for Tropical Diseases on Feb. 11th, 1927, she was admitted at once. The right leg was then swollen below the knee, one area on the lateral aspect of the middle third of the limb being more hyperæmic, and definitely tender to the touch. Right ankle measured 8½ in. and left ankle 8¼ in. Groin glands on both sides were enlarged and the right iliac glands were palpable and tender on pressure. Chest, heart, liver, and spleen were normal. Both tonsils were slightly enlarged and the left showed some cheesy exudate in the crypts. Temperature, pulse, and respiration were normal. Blood count was as follows: red cells, 5,000,000; white cells, 10,000; hæmoglobin, 90 per cent.; polymorphonuclears, 51 per cent.; lymphocytes, 33 per cent.; large mononuclears, 6 per cent.; eosinophils 10 per cent.; parasites, nil. Wassermann was negative. No microfilariæ were found at any time in the blood.

The series of stools examined was negative for ova or protozoa. Urine (catheter specimen) was normal. Menstruation regular with occasional dysmenorrhœa.

Taking into consideration the history of residence in a filarial district (Madras), the adenitis of the groin and iliac glands, the history of onset, and the 10 per cent. eosinophilia, the diagnosis reached was that of commencing elephantiasis of the leg. With the usual treatment of rest, elevation, and massage, the swelling gradually subsided and the tenderness passed away.

The patient was very much distressed when informed of the future outlook in her case as she had seen the condition frequently in India. She therefore readily consented to undergo the "protein shock" treatment in the hope that it might obviate or retard the usual progressive nature of the complaint. After a fortnight's preliminary treatment a series of four "shocks" were given, T.A.B. vaccine being used.

Feb. 25th, 1927: 50 millions T.A.B. given intravenously. Headache and vomiting with slight pain in the right iliac and groin glands followed. Temperature rose to 103·4° F. Throat felt sore. March 6th: 100 millions T.A.B. given. Temperature rose to 101·8. Headache and vomiting recurred. March 12th: 200 millions T.A.B. given. Temperature rose to 101·2°. Headache and vomiting again occurred. March 19th: 250 millions T.A.B. given. Temperature rose to 101·8 °.

Between the "shocks" the patient was permitted to walk about. On March 15th the measurement of the right ankle was 8¼ in., the left 8⅛ in., a reduction of 1 in. since admission.

The patient was discharged from hospital on March 25th, looking and feeling well. All pain in the glands had subsided. She had been provided with an elastic stocking, and in it the ankle measurements then read: right, 8¼ in.; left 8 in.

I saw her again in May. In the meantime she had had tonsillectomy performed. The leg was quite satisfactory with no sign of swelling, and she was still wearing the stocking. Visiting in August, she stated she had been working hard and taking plenty of exercise, but there was still no sign of swelling in the leg. In her last report, written on Nov. 20th from India, she stated that she was travelling constantly as her work demanded, that in consequence she had little opportunity to follow directions as regards rest, &c., that the limb had shown no signs of swelling and when measured was no larger than the other though she had occasionally dispensed with the stocking, and that she felt very well in every way.

Comment.

The condition of pseudo-elephantiasis seen in this country has sometimes been attributed to tonsillar infection, and is reported in some instances to have shown improvement after proper throat treatment. The throat condition may have been a contributory factor in this case, but it does not account for the adenitis of the groin and iliac glands, or for the eosinophilia. These definitely point to an antecedent filarial infection. It is much too soon yet to say that permanent good has resulted in this case, but, in the hope that others, with more opportunities, may carry out "protein shock" treatment in early cases of elephantiasis and report their results, I venture to publish this case.

My thanks are due to Dr. G. Carmichael Low for permission to give this treatment to his patient.

A CASE OF
ACUTE STAPHYLOCOCCAL PYÆMIA.

By S. Deaner, M.R.C.S. Eng.,
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An acute pyæmia caused by infection with *Staphylococcus pyogenes aureus* is uncommon in these post-war days and the symptoms presented in the following case render it worth recording.

On Jan. 21st, 1928, the patient, a man aged 28, developed a carbuncle on his right arm which became very œdematous. A week later he was suddenly seized with a rigor, followed by acute pain in the left side of his chest and abdomen. He immediately developed a most distressing cough, bringing up blood-stained sputum. Simultaneously he had hæmaturia and frequency of micturition.

He was admitted into hospital next day. His condition then was: temperature, 103° F.; pulse-rate, 112; respirations, 48; orthopnœa. Impaired note apex of right lung. Pleural rub left side. Extreme tenderness and rigidity both loins. The urine contained blood and pus. The carbuncle was incised and the *Staphylococcus aureus* was obtained in pure culture from the carbuncle, urine, and blood, and was the predominating organism in the sputum.

On Feb. 1st there was sudden painful swelling of the right testicle. The hæmaturia had now ceased, but pus was still present. On Feb. 3rd a parotid abscess appeared on the right side of the face. This was incised. Purpuric spots appeared and the patient became slightly jaundiced. Although the arm was much better and the patient apparently more comfortable, the jaundice and purpura became more marked until on the 7th there was a sudden attack of dyspnœa and he died.

Unfortunately we did not obtain leave for post-mortem examination, but the case was undoubtedly a staphylococcal pyæmia with metastases especially in the lungs and kidneys. The patient had an autogenous vaccine and intramuscular injections of manganese butyrate as well as treatment for the local symptoms, but the infection was too severe.

I am grateful to Dr. R. P. Cockburn for permission to publish this case.

Death of Dr. T. H. Morris.—The death occurred at Cardiff on Jan. 24th, at the age of 72, of Thomas Henry Morris, M.B., C.M. Glasg., who for over 30 years had been a prominent figure in the public life of Glamorgan. He had been practising in the Rhondda Valley for 36 years, and represented the Tylorstown division on the county council until he became alderman. He was for many years chairman of the Finance Committee, and was made a justice of the peace in 1914. He was a fluent speaker of Welsh, and a great patron of Welsh literature. He is survived by his second wife and by the two daughters of his first marriage

Medical Societies.

MEDICAL SOCIETY OF LONDON.

AT a meeting of this Society on Feb. 13th Mr. HERBERT W. CARSON, the President, occupied the chair, and a discussion was held on the

USE AND ABUSE OF ULTRA-VIOLET LIGHT THERAPY.

Dr. LEONARD HILL, in opening the discussion, first referred to the well-known physical properties of the various kinds of rays which had been investigated, including infra-red and wireless waves. He said that, in respect of waves applied to the human body, two things had to be considered—the biological power to cause a chemical change when absorbed, and the power of penetration. The modern evidence which had been adduced was that the ultra-violet rays attacked the atom and its gyrating electrons and displaced some of those electrons from their orbits, this displacement occurring when the rays were absorbed. The resultant chemical and molecular change was slow; in the case of the human being there was a latent period, and the erythema did not supervene until some hours after the exposure to the rays in question. When the action of the rays on infusoria was watched under the microscope, the living matter could be seen to be gradually coagulating as the animal died. The long ultra-violet rays, of from 4000 to 3000 A.U., were, he said, not greatly absorbed by living tissue; they passed through like visible rays, and reached the blood-vessels below the epidermis. The middle length ultra-violet rays had very little power of penetration, they were largely absorbed by the horny layer of the epidermis, and very few of them reached the blood-vessels beneath. Nevertheless, they would penetrate and kill a bacterium or infusoria. Very short ultra-violet rays could not penetrate more than one bacterium. Rays shorter than 2500 units did not come into the sphere of human effect. It had been shown, by some beautiful experiments, that the rays which had the maximum erythema power were those of 2970 units, that of the sun's rays when it was high in the heavens on a clear day; those rays were specially active in producing vitamin D. Cells which were killed by the rays coagulated, and in this way a protection was set up in the surface cells and the horny layer was thickened. For that reason the burn produced by ultra-violet rays was never deep. Blistering and œdema could occur as a secondary consequence, and in a weakly patient there might be fever and a feeling of illness, but no approach to fatal results was likely. The rays certainly provoked the defensive power of the body. He regarded the skin as the great natural organ of defence against microbic infection, able to maintain its tone and to react in various conditions of temperature and degrees of exposure. There was no better method of stimulating this action of the skin than by the application of ultra-violet rays, as they could be applied to any given area and in any desired dosage. These rays certainly increased the skin's bactericidal power. If, however, the rays were used in doses too big, or over too wide an area, this bactericidal power in the skin was reduced and harm resulted. In the same way people could feel exhausted and become nervous by being too long exposed to sunshine in the tropics. He pleaded for more open-air hospital treatment, as this was a natural corollary of the advances in knowledge concerning actino-therapy.

Treatment of Lupus.

Dr. W. J. O'DONOVAN said that the presentation of clinical results in a rigid statistical form was usually misleading. No two patients with the same diagnosis formed exactly the same clinical problem; differences of sex, age, duration, and intensity must come into the picture. The test of value of light therapy was the fact that it was retained in the physician's armamentarium; it had been continuously carrie out at the London Hospital since 1900, and the numbe of practitioners using it was always on the increas He did not agree that large areas of lupus wer incurable, though they certainly needed prolonge treatment. He contended that surgeons unknowingl produced lupus by operations for glands in the neck he recognised it coming weeks or months after th operation as a sort of apple-jelly infiltration, to whic he gave the name "chin-strap lupus." This could b prevented by giving a routine course of light therap after neck-gland operations. He now had 200 suc cases under treatment. For lupus the light therap must be both general and local, as the destruction c the tubercle bacilli was slow. He declared that light treatment had only served to banish X ray from the therapeutic field of lupus, it would hav amply justified its existence, for, although th immediate results of X rays were often gratifyin later results not only included scars but sometime warty and epitheliomatous metaplasia. For lupu erythematosus, however, light therapy was a waste c time and effort; and he was discouraged by its effec in acne. Psoriasis was of many forms, and or treatment could not be expected to be good for al But in widespread cases he had completely cleare the lesions and obtained two years of freedom fro relapse by a steady daily dosage of ultra-violet ligl from the mercury-vapour lamp, and also by the carbo arc lamp. He combined the treatment with vigorou inunctions of ointment. Actinotherapy was mo valuable in combating pruriginous conditions, thoug it was his strong belief that many of the cases we of psychic origin. Ultra-violet rays have been reporte to cure ringworm, but the small penetrative power these rays did not seem likely to deal with an infectio well below the surface of the skin of the scal Eczema was not a disease, but was a reaction various external irritants. Herpes zoster in patien over 55 years of age, especially the intense pain aft the lesions had scarred over, had not hitherto yielde well, but daily local ultra-violet baths had afforde relief. The same course was of great benefit aft operation for carbuncle, as it hastened convalescen and the coaptation of the edges of the wound. H urged the avoidance of clinical literature written b professed actinotherapeutists, as the optimism such people, unsupported by a large mass of medic experience, was apt to beget unbounded and dangero optimism.

Abuses of Light Therapy.

Dr. C. B. HEALD divided the abuses of ultr violet light therapy into three categories: (1) extrav gant claims, (2) injudicious dosage, (3) home us which had been referred to a good deal in the l press. The first of these he regarded as the greate abuse of all. To claim cures of cases unsupported b scientific measurement or accurate clinical data a based on insufficient numbers was dangerous, m leading, and liable to bring the subject into disrepu Recently claims had been put forward that varico ulcers uniformly yielded to, and could be cured b ultra-violet light. His colleague, Dr. Dora Colebroo who had been working with him at the Royal Fre had treated cases of the condition supplied by I Haldin-Davis, following the exact technique of t man who made the claim, and watching the cas carefully, but there had been complete failu A report on 47 cases treated by another meth would, however, shortly be published. Wrong dosa implied failure to realise the true needs of the patie Treatment could be divided into sedative—includi rest in bed—tonic and, in certain cases, count irritant treatment. The first preliminary was, sure accurate diagnosis, not only of the disease, but the general condition of the patient. Only a kno ledge of the lamp and what it was capable of and wh it was desired to reach with that lamp could lead a proper dosage of rays. In 1922, when less w known on the subject, a man who had had phthis which was at that time quiescent, came because had strained his back by using a pick in a pecul

way. Dr. Heald had decided to give him a counter-rritant dose of ultra-violet light and there was no question that this resulted in a lighting up of his phthisis, and he went through a long and serious illness before he recovered. Ultra-violet light could produce cataract, and it could cause an increase of bacterial infection. In a case of chronic long-standing arthritis of the right hip after a hunting accident, when the patient had made considerable progress under diathermy, the speaker gave him ultra-violet light, the immediate effect of which was to precipitate an acute attack of appendicitis within six hours. He had seen healthy persons converted by these rays into light-sensitive patients.

Dr. Heald did not join in the universal condemnation of the home use of the lamp, neither did he recommend its universal adoption. When well administered, ultra-violet light could alter the lime salts in bone in a short time; it healed over burns rapidly, and modified the nutritive value of the milk of nursing mothers. As, however, the rays could also set up or reawaken phthisis, it was a therapeutic means which could not be thoughtlessly set up in every home. Nevertheless, armed by a set of instructions to meet certain conditions, in the same way as any other prescription was used, there was a considerable sphere for the home use of the rays. In reports of alleged cures there was too often a total lack of essential data, such as the means employed, the time or frequency, and the distance of the lamp from the lesion. There was still need for careful control experiments.

At the Royal Free Hospital a good deal of work had been done with the rays in ununited fractures. In the last five years 4011 fractures had passed through his department, and in no single case had there been failure to bring about union, although cases of delayed union had been sent from infirmaries and other places.

Discussion.

Dr. H. HALDIN-DAVIS agreed that ultra-violet light was practically inert in cases of varicose ulcer.

Dr. D. M. BARCROFT said he believed ultra-violet light was often administered when it was found that no medicine brought benefit. He had succeeded in curing Vincent's angina with the rays in one case. He had found them distinctly disappointing in acne, though there was benefit for a time. He did not think ultra-violet light cured anything, but it postponed relapses, fortified patients and thus enabled them to put up a better fight against disease.

Dr. A. C. ROXBURGH spoke of the value of ultra-violet light for the detection of ringworm of the scalp. A patient was taken into the dark room and stood under the mercury-vapour lamp with the hood closed and its opening covered with Wood's glass, which cut off practically all visible light. Under this light the ordinary hairs looked as if they had been lightly dusted with flour, but ringworm-bearing hairs shone with a greenish iridescence. This not only enabled detection to be quickly carried out, but treatment could be restricted to the exact area required.

Dr. G. VILVANDRE referred to the danger of arriving at hasty conclusions. He averred that the experiments which were carried out on the change in the bactericidal power of the blood caused by the rays were too few to be of value; they should be repeated on a larger scale by many observers. A patient might be in a serious condition and ultra-violet rays might not improve the general health that serious disease, such as carcinoma, might not be suspected. He noted such a case, which eventually died of the carcinoma. Before applying either ultra-violet rays or X rays it was very important to make a firm diagnosis.

Mr. ZACHARY COPE regretted that there were not at available scientific means of measuring the dosage required and given for certain set conditions. The subject was important enough for a committee to investigate and set up standards of dosage.

Dr. LEONARD HILL, in reply, said that the final standards of dose must be biological, and it was easy in the case of a given patient to place round him a belt into which windows were cut and to give 10 or 15 minutes' exposure, noting the degree of erythema. The acetone-blue method was quite accurate for the lamps, and it enabled the operator to ascertain whether his lamp was keeping up to the required efficiency. In reference to what Dr. Vilvandre had said, the work on the bactericidal power of the blood had been done on a large series of animals.

ROYAL SOCIETY OF MEDICINE.

WAR SECTION.

AT a meeting of this Section held on Feb. 11th, Surgeon Vice-Admiral A. GASKELL, the President, being in the chair, Surgeon-Commander S. F. DUDLEY discussed the

Epidemiology of Typhoid Fever in the Royal Navy.

He described three epidemics in the first of which there were 97 cases in a ship of some 1000 men, the 70 officers wholly escaping infection. In the search for the cause water, fried fish, infection ashore, and a carrier, were all excluded, and it became evident that the epidemic was due to the issue of 500 lettuces from a forbidden source, to the men only, six days before the cases began. There were two maxima, the first, 12 days after the issue, the second and smaller a fortnight later. The cases were of a graduated severity; they included some men who had only two or three days' pyrexia, 13 who went back to duty in ten days, and a certain number who had intestinal hæmorrhage and perforation. Half the cases were mild and the total mortality was only seven, perhaps because the cases were all under medical—and the same medical—supervision, so that every one of them was counted, including those which might otherwise have escaped observation. Sixty-eight were treated in a military hospital, the rest on board; all gave positive Widal reactions, even 22 of the mild cases who had never been inoculated. About a third of the men had at some time been inoculated, but two-thirds of the mildest cases had not. The boys and ordinary seamen, who formed the youngest group, got off lightly, but they had all been inoculated within the preceding two months. The younger R.N.V.R. men, aged 18-20, suffered most, being the newest in that environment, whilst the oldest men, the chief petty officers, escaped entirely. When the epidemic was well advanced the whole ship's company was inoculated, but the cessation of cases thereafter was, the lecturer thought, due rather to increase of the herd-immunity than to the effects of inoculation. He had already[1] shown, he said, that infectious disease always attacks most heavily those groups with least experience of the environment; and so it was in this epidemic except for the protection conferred by inoculation. Age, he said, is not in itself important; it is the amount of bacterial experience that counts. In civil life ashore age and immunity generally advance equally, but in the service the bacterial environment is more dense and variable, and recruits are more likely to become infected than seasoned men. The story of a second smaller epidemic of food-borne typhoid was narrated, and an account was given of the many cases spread through ships by a carrier over a period of 16 years.

[1] Med. Res. Council Special Report, No. 75 (1923) and No. 111 (1927); THE LANCET, 1924, i., 1141.

ABERDEEN ROYAL INFIRMARY.—Figures presented to the annual meeting of this institution showed that the additional expenditure caused by increased demands had been counterbalanced by larger revenue. The cost per occupied bed has been reduced by £3 16*s.* 4*d.* At the annual meeting of the corporation of the Aberdeen Royal Mental Hospital, held at the same time, it was stated that the institution last year saved about £1500 by being exempted from income-tax.

ROYAL INSTITUTE OF PUBLIC HEALTH.

AT a meeting on Feb. 8th, at which Sir ERNEST WILD, Recorder of London, took the chair, a lecture was given by Dr. W. NORWOOD EAST on

PROBLEMS IN FORENSIC PSYCHIATRY.

He said that unfortunately, as the result of recent litigation, there seemed to be real danger that the interest of many practitioners in mental disorder might be withdrawn; thus early symptoms would pass unrecognised. A general practitioner might well hesitate to give expert evidence on mental issues, but he might effectively assist the administration of justice by relating his own observations, even if he did not feel justified in forming an opinion on them. The final decision of the expert might receive strong support from the facts observed by the general practitioner. It was essential for the medical witness to remember that the irresponsibility of an accused person was a question for the jury and not for the witness; that an accused person was held to be sane and responsible until proved to the contrary; that certifiable insanity and legal insanity were not coextensive; and that three different standards of insanity were accepted. In non-indictable offences the standard was usually that of certifiable insanity. In cases tried before juries insanity was considered in relation to the mental condition at the time of trial or of commission of the crime. A person found insane on arraignment was liable to be tried later should he recover sanity. The criterion of insanity known as the McNaghten ruling invited criticism and refuted amendment. It had been decided that the question of feeblemindedness should not be put to a jury as the question of insanity was, but the judge might and did consider it, and could send the prisoner to a suitable institution instead of to prison. The law made no provision for lesser degrees of mental alienation, such as psychopathic personalities, psychoneuroses or subnormal intelligence and social capacity, but the judge might modify a sentence on these grounds.

The medical witness had to decide the most difficult question of normality or abnormality, and must assess each individual in the light of his own knowledge and experience. Some doctors held that delinquency in itself indicated abnormality, but those who had studied and worked in daily contact with prisoners could not support this view. There was real danger, however, that it might be misconstrued into an excuse for anti-social conduct. A false suggestion of mental invalidism often aggravated misconduct, especially in young adults in full enjoyment of modern liberty while still physically and mentally immature. Doctors must bear in mind that motive was the reason for a particular course of action, and that intention was the desire to produce a particular result.

Senility and Crime.

Senility was an example of a normal mental state which passed by imperceptible degrees into the abnormal and occasionally thence into insanity. The quantitative reduction characteristic of senility was the mental inferiority of the individual as compared with his former self and not as compared with others. If senile patients became insane there might be qualitative alterations in addition: delusions, hallucinations, and periods of excitement or depression. The crimes of this period were mostly minor, such as vagrancy, begging, and drunkenness, but more serious offences, such as frauds, thefts, and sex offences occurred, and occasionally grave crimes such as murder were committed. There was no reason to consider an aged person abnormal merely because desire outlived virility and resulted in misconduct. In many cases sexual offences had little causal relation with age, although a pathological basis might be inferred when the subject had shown diminished control in ordinary affairs, or when there was a psychopathological climacteric change.

Epilepsy.

There was a general impression that epilepsy wa a common cause of crime, but in fact only 0·5 per cen of 9491 prisoners were epileptic, and even then th crime was not always attributable to the disease Unemployment resulting from fits might be th direct cause of crime, and the irritable epilepti temperament occasionally expressed itself in crime of violence. The grosser abnormal mental states du to epilepsy were automatism, excitement or furo and feeblemindedness. Automatism was a favourit criminal defence and satisfied the legal criterion o insanity, but epilepsy in itself conveyed no immunity Witnesses sometimes assumed automatism withou any evidence of epilepsy, which was essential, thoug difficult to obtain. Automatism might occur withou an antecedent fit, and was generally more conspicuou and prolonged after a minor than after a majo attack. An essential feature was loss of memor for acts and events during the automatic perio Some authorities seemed to think it possible tha the period merged gradually into normal consciou life, so that acts committed just before the perio ended were carried dimly into memory; this vie favoured the malingerer. The highest authorities, hov ever, and those with prison experience, thought tha the epileptic had no such memory, and the speake thought it would be unwise to admit that a crimina act could be the result of epilepsy if certain part culars of it were remembered by the accused. A automatic period did not necessarily follow every fi Automatic acts might vary at different times in th same subject, but were usually habitual acts or th caricature of such acts.

Epileptic automatism might be inferred when a epileptic subject exhibited purposeful conduct o which he had no memory, which lacked consciou motive or intention, which might be repeated in su cessive automatic periods, and which was usual of the nature of a habitual act or the caricature such an act. Epileptic excitement occasional resulted in crime; it might be intense, but wa usually transitory. The subject might be ful conscious of his acts. In epileptic feeblemindednes as in other forms of epilepsy, collateral eviden might be provided by moroseness, suspiciousnes querulousness, hostility, impulsiveness, or religio emotionalism.

Alcohol and Crime.

The medical witness must be careful not to confu alcoholic insanity with intoxication. The ment conditions in which alcohol was associated wi crime might be classified as acute, including drunke ness, mania-à-potu, and delirium tremens; and chroni such as alcoholic hallucinatory insanity, alcoho pseudo-paresis, pseudo-paranioa, and dementia. Wh an alcoholic was also epileptic acts committed duri intoxication might be so automatic as to be confus with epileptic automatism. The latter exculpat the accused, whereas automatism resulting fro intoxication was a voluntary condition produced b misconduct for which the individual was responsib An accurate diagnosis was therefore legally importan but might be extremely difficult, as convulsio might be due to alcohol or epilepsy. If the medic evidence were evenly balanced the witness shou content himself with testifying that the crime mig be due to either or both and must not weight the scal on either side. In mania-à-potu the subject co mitted acts of extreme violence over which he ha no control and of which he might have no recollectio If an epileptic indulged in alcohol, mania-à-po might be confused with epileptic furor. The ter "pathological drunkenness" was sometimes loose used; a special term should not be used if it on meant that some people were more susceptible tha others to alcohol on account of heredity, disease injury. Indeed, the technical phrase might false lead a jury to believe that the drunkenness was not voluntary act.

When an alleged crime was such that the intenti of the accused was one of its constituent element

ıe jury might consider the fact of intoxication. If e had been too drunk to form an intention, he might e convicted of a lesser offence into which intention id not enter. Insanity caused by intemperate habits ıight exempt an accused from responsibility. Mania--potu or delirium tremens practically amounted to ·gal insanity. The symptoms of chronic alcoholic ısanity varied in intensity according to the time ·hich had elapsed since drinking. Alcoholics might ave sufficient control when sober to hide any delu-ons or hallucinations, but expressed them freely ·hen temporarily under the influence of drink.

Uncontrollable Impulse.

Witnesses were not always prepared to distinguish etween an uncontrollable impulse and an impulse ·hich was not controlled. To avoid confusion, regard ıust be paid to the emotions accompanying the ıherited instincts which underlie human conduct. he instincts might act with too great or too little ›rce and the emotional expressions might be excess-ve or insufficient. Crime might result from the ›njunction of an over-dominant sex instinct with efective control and inadequate moral sentiment. imilarly the wealthy shoplifter might be suffering ·om a strong acquisitive instinct, of which she was ware, but nevertheless she flirted with temptation y attending sales. Faulty control was often asso-ated with crime, and occurred when the emotional ttitude accompanying instinctive action failed to ecome inhibited by the consideration of the probable ›nsequence, or when the conscious exercise of the ·ill was insufficiently opposed to the desire of the ıoment. Control depended upon the capacity to roduce sufficient conscious mental energy to inhibit esire and enable action to be based on formed ıdgment. Irresistible impulse might be very real, nd the sole indication of mental disorder, although ot recognised in itself as an answer to a criminal harge. The court might accept proved insanity as n explanation of the impulse. An irresistible impulse ad certain features which, taken together, distin-uished it from a criminal impulse which was con-·ollable but not controlled. It was recurrent, the ıbject throughout was consciously aware of all that ›ok place, and retained clear memory; he passed ırough severe mental conflict before giving way to ıe impulse, which was followed by a sense of relief, ccompanied by regret that the impulse remained nconquered. At the onset of the illness the impulse ·as resisted, and if crime resulted it seemed to be ıotiveless. The detected shop thief, on the other and, would complain of a sudden uncontrollable npulse never before experienced. In practice an ssumed defence of irresistible impulse was easily isposed of, for only a particularly well-informed ıalingerer could describe all its features.

Encephalitis Lethargica and Adolescent Instability.

Sleepy sickness conveyed no immunity from legal esponsibility, but the medical witness might be sked whether a particular crime was the result of a ast attack. If the intellect was impaired and the ıental age corresponded with the age of the accused ·hen he had had the attack, then there was some eason to attribute subsequent criminal conduct to he disease. 16·5 per cent. of a series of 72 persons ·ho committed crime after an attack of sleepy sick-ess were known to have committed crime before it. 'he disease attacked young people, and subsequent ıisconduct might be due to other causes, such as dolescent instability. Criminal conduct in young dults was often due to excessive and irregular evelopment of the instincts and emotions, and faulty ıhibition. When the resulting mental instability ·as pronounced the subjects were inconsistent and nreliable, passing rapidly from one instinct, emotion, r impulse to another, and usually belonging to the ggressive criminal type. They were easily mistaken or cases of dementia præcox or manic-depressive ısanity, and were sometimes certified as mental efectives. Many of them, however, became adjusted later. Medical evidence should be based upon accurate observations and reasoned deductions, and not upon assumptions which cannot be supported under cross-examination. If this rule were followed, medical evidence would be more reliable and opposing views between medical witnesses less pronounced.

The Assessment of Punishment.

The CHAIRMAN said that everybody must have the greatest sympathy for doctors called upon to certify people as insane, and he wondered they ever had the courage to certify anybody after the things which had happened. In the preface to Dr. East's book he had read that there were nine distinctive and antagonistic schools of psychology that must be reckoned with. The law had one school of psychology and not nine: a man was presumed to contemplate and intend the consequences of his act. Once the doctrine of uncontrollable impulse got into the law courts justice would be impossible. He hoped some day that murder in the second degree would be part of the criminal law of this country. It was essential that the medical witness should speak from personal knowledge and experience. In so many cases the wealthy person went to a doctor for the first time in order to get him as witness. It was most important that the medical and legal professions should see each other's point of view. In many cases the judges or magistrates were only too willing and thankful to receive the suggestions of a medical witness as to the treatment of a criminal. If there was one difficult task in life it was to assess punishment. The three professions—medicine, law, and religion—should work together, for they had the same object in view.

MANCHESTER MEDICAL SOCIETY.

A MEETING of this Society was held on Feb. 1st, with Dr. J. GRAY CLEGG, the President, in the chair. A discussion on the

Ætiology of Chronic Arthritis

was opened by Dr. J. B. BURT, who protested against the theory that all chronic arthritis was caused by some focal sepsis. It was just as reasonable to say that there was only one cause of chronic arthritis as to say there was only one cause of heart disease. After referring to the possible parts played by trauma, vitamin-deficiency, and other factors, Dr. Burt devoted special attention to the distinctive clinical signs of arthritis due to endocrine deficiency. These, he said, occurred chiefly in women at the menopause, but were also seen in girls at puberty, in thyro-pituitary deficiency, and sometimes in men over 60 with osteo-arthritis of the hip.

Mr. HARRY PLATT agreed that there was a tendency to exaggerate the importance of focal sepsis as a primary ætiological factor in chronic arthritis as a whole. This question must still be considered sub judice. The bacteriological and histological examination of tissues removed in cases of osteo-arthritis of the hip had given conflicting results. Cultures made from osteophytes and from portions of the distorted head of the femur had, in his own experience, proved sterile. On the other hand, the histological changes in the thickened joint capsule resembled those seen in other forms of fibrous tissue lesion where a definite inflammatory or microbic basis was admitted. Discussing the influence of injury in causing certain types of chronic arthritis, Mr. Platt said that a pure traumatic arthritis without the intervention of other ætiological factors had long been recognised, and was seen to follow mal-union in fractures of the shafts of the leg bones, or fractures involving the ankle-joint itself. Another factor of great importance was static error or incongruity of joint surfaces. Mal-adaptation of joint surfaces was by no means uncommon, particularly in the hip-joint. This condition obviously could follow an injury, or a mild inflammatory attack. More interesting still was the joint incongruity due to congenital causes. In recent years the significance of

the minor congenital anomalies of the hip-joint had been much studied by Calot and others. Congenital subluxation of the hip was present in a fair proportion of otherwise normal individuals, whose hip-joints were inclined to react to conditions of strain or infection at various periods of life. Calot claimed that the affection known as pseudo-coxalgia was really an unrecognised subluxation; and that the osteo-arthritis of middle life represented superimposed changes in a hip already defective from birth. This sweeping dictum could not be accepted, but it was fair to state that hip-joints, in which there was incongruity of surfaces from the very beginning, became the seat of chronic arthritis in later life.

MANCHESTER PATHOLOGICAL SOCIETY.

A MEETING of this Society, held on Feb. 8th, with Mr. F. H. WESTMACOTT, the President, in the chair, was devoted to the subject of

High Blood Pressure.

Dr. CRIGHTON BRAMWELL, in a paper by himself and Dr. Reginald Ellis, referred to the difficulty of defining the upper normal limit of blood pressure. As with many other physical attributes, he said, the range of variation followed the ordinary type of normal frequency curve. He did not regard a systolic reading of 150 mm. of mercury as necessarily pathological even in young people. There was little tendency for the systolic pressure to rise between the ages of 20 and 40, and even in healthy old people a systolic reading of under 150 was common. The high pulse pressure of old age was a compensatory mechanism to overcome the loss of elasticity in the arteries. Even apart from any structural change, the elasticity of the arterial walls might be greatly impaired by a high diastolic pressure; hence a relatively small rise in diastolic pressure would entail a much greater rise in pulse pressure if the heart was to maintain its output. In this respect a high diastolic pressure was just as important as a stiffened arterial wall in determining exercise-tolerance. The sphygmogram of hyperpiesis resembled that of aortic stenosis, the maximal pressure in the aorta being attained relatively late in systole. With regard to prognosis in these cases, Dr. Bramwell pointed out that the condition of the kidneys was of the first importance. In primary hyperpiesia, though the pressure might be higher, the outlook was not quite so grave as in the renal cases, in which the age-incidence was lower and which generally ended in uræmia. The diastolic pressure was of special significance in relation to the ultimate prognosis, since it represented the liability which the heart was called upon to undertake. The systolic pressure, on the other hand, was more closely related to the immediate issue, since it indicated the capacity of the heart to meet its liabilities. A falling systolic associated with a rising diastolic pressure was always a very bad omen, since it signified heart failure.

Prof. J. SHAW DUNN said that an account of the morbid anatomy of persistent hypertonus might still very well start with a reference to the long-established fact that chronic nephritis, primarily a disease of the kidneys, commonly produced a high blood pressure. The available evidence, including the temporary rise of pressure in acute nephritis, pointed to the circulatory change being a reaction to impairment of excretory function. It might be that some potent but hitherto unrecognised pressor substance was retained in the body owing to impaired excretion and so acted in excess on the vessels; another explanation, no less likely, was that in accordance with Cushny's view, all excretory substances were eliminated from the blood stream by filtration under pressure of the blood, and that where the field of filtration was limited a greater pressure was required to secure adequate elimination. In the more mysterious group of non-renal cases, or essential hypertonus, many of the morbid changes in the organs were of secondary character and of late developmen These were degenerative phenomena, such as cerebr hæmorrhage and cerebral softenings, atheroma arteries and shrinkage of the kidneys. Local softe ings and patches of atrophy of tissue seemed depend at times on the blood pressure, though hig being inadequate to perfuse some of the vesse whose contraction had helped in raising it. The degenerative changes varied markedly in degree they appeared to be most marked where deat occurred from cerebral hæmorrhage. In other case forming a smaller group, where death was due failure of cardiac compensation, the arteries oft had healthy intimas and the kidneys were smoo and of normal size or larger. The structural chang which might be said to occur in all cases of essenti hypertonus, or at any rate were found post morte in even the earliest cases, were (1) hypertrophy the left ventricle of the heart; (2) hypertrophy of t middle coats of the arteries generally—this was, his experience, invariably accompanied by sor fibrosis of the media, a degenerative feature, but earlier stage of pure hypertrophy might be presume (3) changes in minute arterioles of the size of t afferents to renal glomeruli. An affected ves showed thickening with fatty degeneration of i intimal coat, starting exactly at its origin from t parent trunk and extending throughout its lengt From its distribution and character this lesi hardly suggested the action of a toxin in the ordina sense; if such a toxin was at work it was difficu to see why the parent vessel should escape dama so completely as it often did. It seemed on t whole more likely to be due to a poor blood-supp in the smaller vessel, resulting from contraction the larger one. If this explanation of this chan could be supposed to hold good then all the earli structural changes in hypertonus were mostly eviden of the mechanism for maintaining it or of defec arising from the operation of that mechanism; t ultimate causal agency remained quite obscure. this agency was an abnormal pressor substance had still to be demonstrated. Other possibilit might be imagined on lines of analogy with chro nephritis—e.g., the presence in the blood of a su stance of low solubility which demanded excessi filtration for its elimination even by normal kidney lead and perhaps uric acid might suggest this type action. Increased osmotic pressure of the blo colloids would also demand a greater filtrati pressure.

Mr. GEOFFREY JEFFERSON dealt with blood pressu readings in the course of operations, especially ope tions on the central nervous system. The systo blood pressure and the pulse-rate were charted eve five, or in some cases, ten minutes regularly and t curves so obtained gave valuable information as the condition of the patient and some indication, any stage, of his capacity to undergo prolongation the operation. In more than one instance patie whose systolic pressure had fallen as low as 45 50 mm. of mercury had made uneventful recoveri

LIVERPOOL MEDICAL INSTITUTION.

AT a meeting of this Institution held on Feb. 2 Mr. K. W. MONSARRAT read a paper on the

Surgical Treatment of Diverticulitis.

After referring to the figures for the distribut of diverticulosis and of diverticulitis in the co given by E. I. Spriggs and O. A. Marxer,[1] he poin out that the conditions in which the disease w clinically evident could be described under fe headings: acute and chronic diverticulitis with complication, acute and chronic perforative dive culitis, and diverticulitis associated with steno In acute diverticulitis without complication n surgical treatment was, in his opinion, desira

[1] THE LANCET, 1927, i., 1067

whilst patients suffering from chronic diverticulitis ould be kept in health if they would submit to egular medical treatment. Acute perforation of a iverticulum should be treated on ordinary surgical rinciples, but in chronic perforation surgical treat-ient should be limited to opening and draining bscesses. When diverticulitis was associated with tenosis resection of the affected bowel was the peration of choice, but was only likely to be possible n a minority of cases, being often prevented by the ituation of the stenosis or by the extent of the isease in the bowel. The alternatives to resection ere short-circuit and colostomy. Among the 8 cases which he described he had had one in which olostomy was followed by subsidence of the disease nd disappearance of the stenosis, a second in which patient had remained well after a short-circuit peration, and a third in which successful resection as done.

EDINBURGH MEDICO-CHIRURGICAL SOCIETY.

A MEETING of this Society was held on Feb. 1st, ith Dr. A. LOGAN TURNER, the President, in the hair.

Dr. TORRANCE THOMSON read a communication on

Anæsthesia in High Abdomen Operations.

He stated that the chief difficulty was to provide dequate relaxation and at the same time to safe-uard the interests of the patient. This difficulty rose because stimulation of this area tended to set p glottic spasm and so to arouse special efforts on he part of the respiratory muscles. Atropine was ssential if ether was used. Morphia was generally iven in combination with atropine or scopolamine. Morphia might dull the respiratory centre, and scopola-ine occasionally greatly reduced the respiratory rate, o that there might be some difficulty in introducing fficient concentration of ether, and, moreover, here might be risk of suboxygenation, a very serious natter in the immediate post-operative hours. Both these drawbacks might be countered by the dicious use of oxygen and carbon dioxide.

For general anæsthesia alone nitrous oxide and xygen would not suffice to produce relaxation. t was not justifiable to depend on chloroform for he deep anæsthesia required in the initial stages of he operation, therefore ether was the agent of hoice. Ordinary inhalation anæsthesia might suffice, ut intratracheal insufflation of ether provided the est operation facility. The advantages of this ethod were that the anæsthetist controlled respira-on so that the diaphragm and muscles of the bdominal wall were not called upon to make special forts and that, as long as circulation was satis-actory, the depth of anæsthesia could be rapidly hanged if necessary. If an oxygen cylinder were sed to produce the air-current, oxygenation was erfect, the respiratory centre was not stimulated, nd everything conduced to the "silent belly" eloved of the surgeon.

Colonic oil-ether anæsthesia was deserving of a ore extensive trial in abdominal operations than it ad yet received. Local anæsthesia was generally rried out by the surgeon.

Regional Anæsthesia.

Dr. Thomson could speak from an experience of 00 cases of splanchnic anæsthesia carried out in llaboration with Prof. J. Fraser in his wards at the oyal Infirmary, Edinburgh. Careful notes had en taken of the condition of patients before, during, nd after operation. Blood pressure and pulse-rate cords were kept and operation facility noted. appis's method, introduced into this country y Hillman, was used. Light general anæsthesia as induced after the injection and the patient was ept asleep and, if necessary, anæsthesia was eepened. All high abdomen cases were for a time bmitted to the method. In a few patients abdominal field-block was carried out without the posterior injection being made; this was done for purposes of comparison. The conclusions reached were that the patients tolerated the operations well, their after-histories being very satisfactory. Shock had seldom been marked during the operation and in all cases had been quickly recovered from. None of the fatal cases had died of shock and there was no evidence that the anæsthesia had played any part in producing a fatal issue. There had been no post-operative respiratory complications. The impression received was that vomiting was less marked. The operation facility was on the whole good, but could not, in the speaker's opinion, compare with that attained under intratracheal insufflation of ether. It was important to note that these patients received, in addition to the splanchnic injection (1) preliminary morphine-scopolamine medication, (2) abdominal field-block, and (3) light general anæsthesia.

The success attending the few control cases, in which the same technique had been carried out with the exception of the splanchnic injection, suggested caution in expressing any very definite opinion on the value of the splanchnic method.

Discussion.

Prof. JOHN FRASER agreed that there should be the greatest coöperation between surgeon and anæsthetist. Although thoroughly impressed by intratracheal anæsthesia, he thought that with chloroform the greatest possible muscular relaxation was obtained. With pre-operative purging and starvation pressed to its usual extent, it was not surprising that gastric disturbance should follow.

Prof. D. WILKIE, though in most cases employing ordinary chloroform and ether, had for 12 years used field-block anæsthesia with general anæsthesia with excellent results. Spinal anæsthesia with scopolamine and morphia, field-block, gas and oxygen, he thought, had no unusual dangers.

Dr. F. G. GIBBS discussed the relative advantages and disadvantages in the use of scopolamine, morphia, and atropine. He did not care much for the intricacies of the apparatus for intratracheal anæsthesia.

Dr. JAMES YOUNG spoke of the advantages of spinal anæsthesia in Cæsarean section; it had a hæmostatic action on the uterus.

Mr. J. W. STRUTHERS, Mr. D. S. MIDDLETON, and Dr. A. GOODALL also spoke.

Pneumonia in Childhood.

A clinical and pathological demonstration on this subject was given by Dr. CHARLES MCNEIL and Dr. W. A. ALEXANDER. From statistics it was shown that, while lobar pneumonia occurred with fairly equal frequency throughout childhood, the cases of broncho-pneumonia were concentrated in the first three years and that this latter type of disease accounted for about 90 per cent. of the total deaths. Difficulties in the diagnosis of pneumonia and in the differential diagnosis of the two types were then discussed and illustrated. Examples of special types of lobar pneumonia—"cerebral," "abdominal," and chronic—were then given; and of certain sequelæ of broncho-pneumonia, such as bronchiectasis and fibroid lung.

Dr. ALEXANDER showed a series of lantern-slides illustrative of the pathology of pneumonia in childhood. These included photographs of paraffin sections of whole lungs prepared in the laboratory of the Royal College of Physicians of Edinburgh. The speaker believed that lobar pneumonia occurred throughout infancy, but that the prognosis was good, and few opportunities were afforded of studying the disease in the post-mortem room. Only one slide of typical lobar pneumonia was shown from a child of 3 years of age. Almost all the fatal cases were examples of broncho-pneumonia. There was a great tendency for confluence to occur in infancy. Broncho-pneumonia was characterised by an acute interstitial inflammation which overshadowed and often preceded the alveolar exudation. The extent and degree of this

involvement of the connective tissue framework of the lung determined very largely the seriousness of a case and also explained most of the complications and sequelæ—e.g., suppuration, bronchiectasis, and fibrosis. The problem of broncho-pneumonia in infants in Scotland was an urgent one, and in the opinion of the speaker much might be done in the matter of prevention by an attack on those factors which made for susceptibility to infection. There was much experimental and clinical support for the contention that dietetic considerations were all-important in relation to acute respiratory infections at that period, when the energies of the body were devoted almost entirely to active growth.

Reviews and Notices of Books.

AN INTRODUCTION TO MEDICAL PROTOZOOLOGY.

With Chapters on the Spirochætes and on Laboratory Methods. By ROBERT KNOWLES, B.A. Camb., M.R.C.S., L.R.C.P., Lieut.-Colonel, Indian Medical Service; Fellow of the Asiatic Society of Bengal; Professor of Protozoology, Calcutta School of Tropical Medicine. London: W. Thacker and Co., 2, Creed-lane, E.C. 4; Calcutta: Thacker, Spink and Co. 1928. Pp. xii. + 887. Rs.25.

DURING the past four years there have been published a series of text-books devoted to the medical aspects of protozoology. First, there appeared Hegner and Taliaferro's "Human Protozoology" in 1924, Craig's "Manual of the Parasitic Protozoa of Man" in 1926, and Wenyon's "Protozoology" in the same year. Now we have Knowles's "Introduction to Medical Protozoology." It is inevitable that each book should have taken advantage of the previous publications, and this is candidly admitted by the last author who says in his preface that he has looted or borrowed wholesale from Wenyon's work as also from Dobell's "The Amœbæ Living in Man," and Dobell and O'Connor's "The Intestinal Protozoa of Man." Nevertheless, the author has done his work well and has given to students of protozoology, especially the Indian students whom, above all, he has in mind, a clear, up-to-date, and easily readable account of the parasitic protozoa of man and animals and the coprozoic forms which occur in fæces.

The book is divided into three parts, followed by an index. Part I. (625 pp.) describes in a series of 19 lectures the main facts which are known regarding the parasitic protozoa of man, with sufficient reference to the allied forms in animals to enable the student to realise the extent and distribution of this group of organisms. Part II. (143 pp.) deals with laboratory methods and is divided into seven chapters in which are described methods of technique which are likely to be required for the study of protozoology in its relation to medicine. Part III. (92 pp.) is devoted to references to literature and includes all the important publications on the subjects dealt with in Part I. Finally, there is the index of 25 pages. The printed matter is sufficiently clear to be easily read, but the paper chosen does not do justice to the 174 figures, many of them "half-tones," which inevitably suffer unless good paper be used. An attractive feature of the book are the 16 coloured plates, although they are not of equal value. It has evidently been the aim of the publishers to keep the price down, so that for the modest sum of 25 rupees students can obtain a vast amount of trustworthy information regarding the present position of the subject.

The author's long experience of India naturally leads him to dwell on the Indian aspect of the questions dealt with and this in itself is one of the most valuable features of the book from the general reader's point of view. An interesting statement is made that the author has twice cured kittens experimentally infected with *Entamœba histolytica* by the administration of a single large dose (5 mg.) of emetine. A practical point for the teacher is that splendid specimens of the monkey entamœbæ, which a indistinguishable from *E. histolytica* and *E. coli* man, can be readily obtained by giving high sali enemata to these animals. It is noted that practical every sweeper at the Calcutta School of Tropic Medicine is a healthy carrier of *E. histolytica*. A appendix to Lecture V. describes the diagnosis dysenteric stools, a coloured plate illustrating the c exudates in bacillary as contrasted with amœb dysentery, and two figures the appearance of Charco Leyden crystals, so often associated with amœb infection of the intestine. The mastigophora, includi coprozoic flagellates, the intestinal forms, trypan somes, and leishmania, and the allied flagellates insects receive considerable attention. The nam *Leptomonas* is regarded as a synonym of *Herpet monas*, Wenyon's definition of the latter not bei accepted, for the author doubts if the trypanoson forms occurring in insects are actually of this natur The author's account of the leishmania is of speci interest because of his extensive experience of t diseases caused by them, especially of kala-azar, India. It may be news to some that even in the pr antimony days the mortality from kala-azar was n higher than 70 per cent. The description of t development of the sandfly theory of transmissi and the work done in India on the development of t parasites in these insects is most interesting a instructive reading. As regards the actual tran mission of kala-azar by the India sandfly *Phlebotom argentipes*, though the distribution of the fly and t behaviour of the parasite in it point to its being t actual vector, the author believes that the fin proof by experimental transmission will not possible till the factor of host resistance to infecti has been thoroughly investigated. The trypanosom are carefully discussed and readers will find in t section all the latest information.

A section on the Cnidospiridia is followed by consideration of the Sporozoa, amongst which t parasites of malaria are most important and a fully described as regards their structure and behavio in man and the mosquito. The factors which influen the development of the parasites and many oth features of infections are carefully discussed. It pleasing to note that the author adopts a conservati attitude regarding species of malarial parasites oth than the three well-known types. An observation interest is that on three occasions *Chilodon* has be found in fresh enemata from the monkey *Macac rhesus*, by which means *Balantidium* can also readily obtained. Though the spirochætes are n regarded as protozoa they are fully considered. a final lecture are considered Rickettsia, Chlamydozo and cell inclusions, while certain notes on rabies ha been included. The practical section, includi methods of technique, warnings (with a colour plate of blood fallacies and puzzles), insect dissectio (by Ronald Senior White), and methods of drawin micrometry and enumeration bring to a close t descriptive matter of the book. Some minor erro in description and nomenclature do not detra appreciably from the general excellence of the wo

The book will undoubtedly be read by very ma students and workers who will profit immeasurab by the clear, lucid, and in places racy presentation o science which has now grown to enormous dimensio

MATERIA MEDICA, PHARMACY, PHARMACOLOGY, A THERAPEUTICS.

By WILLIAM HALE-WHITE, K.B.E., M.D., LL. Consulting Physician to Guy's Hospital. Ni teenth edition. London: J. and A. Churchi 1927. Pp. 712. 10*s.* 6*d.*

THREE years have elapsed since the last edition this valuable little book appeared, and a number new therapeutic agents have established themselv in that period. Among those described for the fi time are mercurochrome, sanocrysin, methyl alcoh oil of chenopodium, and hydnocarpus oil. Old dru in new settings are lead for cancer, bismuth

syphilis, and carbon dioxide for anæsthesia. Parathyroid is added to the glandular group, and among the bacteriological substances now in recognised use are scarlet fever antitoxin, toxin-antitoxin mixture, and horse serum. Protein therapy receives a page to itself, but its uses are wisely confined to hay-fever and asthma, with a brief reference to the other anaphylactic conditions. The whole text has been thoroughly revised, and the book remains one which no medical student or practitioner can afford to be without.

PHARMACY.

Whys in Pharmacy: A Compilation of Reasons underlying the Principles of Pharmacy. Third edition. By EDSEL A. RUDDIMAN, Pharm.M., M.D. London: Chapman and Hall, Ltd.; New York: John Wiley and Sons, Inc. 1927. Pp. 203. 10*s*.

APART from a few pages of chemical equations and an index, this work consists entirely of short paragraphs each comprising a question and an answer, e.g., "Why should such substances as calomel and pecacuanha be very finely divided? The finer the powders the more active they seem to be." The subtle dubiety of the "seem" almost suggests that this compilation is a variant of a game of question-and-answer, popular in the columns of some of our daily papers. The fact, however, that the preface to the first edition, dating from 1905, disclaims any intention of "quizzing" leaves the purpose of the manual obscure. The paragraphs are grouped by an arbitrary division according to subject matter.

BLOOD TRANSFUSION AND GROUPING.

La Transfusion de la Sangre. By JULIO CÉSAR ESTOL. Montevideo: Palacio del Libro. 1927. Pp. 256.

Die Bluttransfusion. Von Dr. E. KUBÁNYI. Berlin and Vienna: Urban and Schwarzenberg. 1928. Pp. 127. M.6.

Rassenunterschiede des Blutes. Von Dr. WALTER SCHEIDT, Privatdozent für Anthropologie an der Universität Hamburg. Leipzig: Georg Thieme. 1927. Pp. 109. M.4.80.

MONOGRAPHS on blood transfusion are gradually being produced in every quarter of the globe. We have already had examples from England, the United States, France, and Germany. Two of the volumes now before us were written in South America and Hungary respectively. The purpose of such works is to provide a comprehensive account of the subject rather than to embody new material and observations. This object seems to have been attained in the works under review. The indications for transfusion are much the same all the world over, and the technique differs only in detail. Dr. Estol favours the use of a syringe, the interior of which is rinsed with citrate solution. This method is justified in his practice by the fact that the amount of blood given at one transfusion is very often less than 200 c.cm., a surprisingly small quantity judged by the standards recognised in this country. Even for severe hæmorrhage for a gastric ulcer or of traumatic origin an amount exceeding 300 c.cm. is the exception rather than the rule. A great part of Dr. Estol's book is taken up by tables recording the details of the 467 transfusions which he has himself performed.

Dr. Kubányi's book is of rather wider range and takes more account of the work done on the subject in other countries. It is the more surprising that, in view of the results obtained at St. Mary's Hospital, Dr. Kubányi should pronounce emphatically against the use of defibrinated blood. He himself favours the use of citrated blood which is injected into the patient's vein by means of a syringe. His monograph is well illustrated, and gives a very lengthy list of authorities.

The racial distribution of the blood groups has for some years been recognised as a possible source of light upon the problems of the origin of the different races of mankind. In the small volume before us Dr. Scheidt gives a comprehensive survey of the observations that have so far been made, with special reference to the incidence of the groups among European peoples. Much work remains to be done before definite conclusions can be made, although the present report embodies material from 203 different publications.

MEDICINE FOR LAYMEN.

The Human Body. By L. CLENDENING, M.D. London and New York: A. A. Knopf. 1927. With 103 figures. Pp. 399. 25*s*.

Medical Science for Everyday Use. By SHIELDS WARREN, A.B., M.D., Instructor in Pathology in the Harvard Medical School. Philadelphia: Lea and Febiger. 1927. Pp. 179. $2.00.

That Body of Yours. By JAMES W. BARTON, M.D., Medical Director, Canadian Health Service Institute. London: Hodder and Stoughton. 1927. Pp. 304. 2*s*. 6*d*.

Dr. Clendening has set out to write an account of the human body, its anatomy, physiology, and diseases, which shall be a suitable text-book for such grown-up men and women as want to know about such things. Proceeding with that entertaining air of cynical frivolity which has had a vogue in American wit in recent years, he has, we think, succeeded extraordinarily well in a very difficult task. The book is a sort of "family physician up to date," and the method of treatment reflects the changed outlook of modern medicine; instead of discreet references to the symptoms which may arise from the diseases to which females are peculiarly liable, and the drugs which may be taken to alleviate them, we have a clear well-illustrated account of pregnancy, parturition, fibroids, and carcinoma; a description of the anatomy and physiology of respiration leads on to pneumonia and phthisis, and so with the other systems of the body. The layman's idea of medicine is, in short, to have the same basis of fundamental knowledge as the doctor's; which is a very admirable plan. The good common sense and absence of faddism are particularly notable: "Your bowels, like the universe, will get on very well if you leave them alone" (p. 100), the treatment of phthisis (p. 120), the manufacture of invalids by periodic health examinations (p. 170), the necessity of every diabetic being under the care of a physician (p. 183), the advantages of picking up sex knowledge in the gutter (p. 277) are some examples; and there is hardly anything about vitamins. There is, of course, a good deal to which some people may take exception. It has been unusual in the past for a doctor to take laymen so frankly into his confidence, and the book is so intensely up to date that it necessarily contains a good many dogmatic statements on points about which there is no professional unanimity; indeed, it dwells so much on the growing edge that older medical men will probably find it as useful as their younger colleagues will find it provocative. Some people will think that such serious matters should be treated with more solemnity, and the contemptuous references to organised religion (e.g., p. 315) are, in this country at least, offensive. What proportion of the general public really wants to know what this book tells them so well is a speculative question; we suspect that a good many people are quite indifferent about the details of their own insides. But to the curious it may be recommended, with some interest in their reactions to it. What is known as "physiology and hygiene" is now widely taught in schools; no doubt it is time that adults should have corresponding opportunities of education.

Dr. Warren's book consists of articles which have appeared in the Boston *Sunday Herald*, selected, rewritten, and collected into a small volume which is excellent of its kind. The articles are clear, not too elementary, free from prejudice, and above all

interesting to read. There are 23 of them, and it is difficult to single out any for especial praise, but those which appear to be the most valuable are on tuberculosis, cancer, diphtheria, pneumonia, and heart disease, all maladies in which the death-rate offers ample scope for preventive measures. Dr. Warren quotes freely from recent work, interpreting scientific papers for his lay-readers in a sensible way, and steering a very good middle course in such troubled waters as "auto-intoxication."

Dr. Barton's book sets out with the same high ideals which have so successfully stimulated Dr. Warren, but he has attempted too much, and the result lacks continuity, while it is not altogether free from errors. For example, in a section on "fits," the author ignores the necessity for the proper treatment of epilepsy by sedative drugs, and instead gives the impression that diet and exercise are of greatest importance in lessening the number and severity of fits. Certain sections of the book are very good, particularly those on the feet and those in which the body is likened to a motor-car. As from the preceding books, the public will derive sound counsel here upon much that matters.

PERSONAL HEALTH.

By Prof. EMERY R. HAYHURST. London: McGraw-Hill Publishing Co., Ltd. 1927. Pp. 279. 15*s*.

On Middle Age and Keeping Young. By Dr. E. L. HOPEWELL-ASH. London: Mills and Boon. 1927. Pp. 121. 3*s*. 6*d*.

IT has been estimated that 75 per cent. of illness could be warded off or controlled if everyone applied the hygienic and medical knowledge now available. This may seem too optimistic an estimate, but there is little doubt that the great increase in good books on personal health and hygiene should eventually show a harvest of better physique among people who take the trouble to read them. Prof. Hayhurst, of Ohio, has written an excellent manual for "the busy person in shop or office." He discusses in some detail the purposes of the principal organs and parts of the body which should be the common knowledge of all intelligent persons, and he deals with the principal diseases, their causes, symptoms, prevention, and early treatment. The book is attractively written and well produced, and although its price is high for the type of individual to whom it should appeal it is well worth the money.

Dr. E. L. Hopewell-Ash's little book deals with the personal health and hygiene of the middle-aged, but we do not find the subject matter sufficiently well presented to appeal to the more intelligent class of reader. It does not help the woman at the time of the menopause to be told to "hold on whilst this natural crisis of life affects you," and the student of dietetics will wonder what the author means when he writes, "Nothing is digestible if it is mixed with too much of other things at the same time." Moreover, although the author doubts it, Sir Archibald Garrod is (happily) still alive. Of course, most of the advice given will be found serviceable.

JOURNALS.

A GERMAN JOURNAL OF ANÆSTHESIA.—A new journal, *Narkose und Anaesthesie*, has appeared in Germany, the first number being published in Berlin on Jan. 15th. This is a novel production, for it is the first time that a periodical has been issued in Germany, or, indeed, on the continent at all, which is devoted solely to the study of anæsthetics. In fact, the publisher, in his foreword, comments on the comparative backwardness of German medicine, contrasted with that of England and America, where the study and practice of anæsthetics are concerned, and he alludes to the *British Journal of Anæsthesia* and the "Current Researches in Anæsthesia and Analgesia" as worthy of imitation. This number of *Narkose und Anaesthesie* comprises a long article on new routes for the anæsthesia of the jaw and face which is entirely occupied with local measures. The other important original article deals wit avertin. The nature of these two contributions significant of the relative importance of inhalatio anæsthetics and other methods in Germany. The is no mention of the former in either of the tw original articles in a new journal devoted solely t anæsthetics. We welcome *Narkose und Anaesthes* as a valuable addition to current literature and on which will enable our readers to be kept in touc with the latest developments of anæsthetic study i Germany.

THE GLASGOW MEDICAL JOURNAL: CENTENAR NUMBER.—The February issue of the *Journal* appea on the hundredth birthday of this valuable periodica and its history and progress are well set out in a article, charmingly illustrated, which deals with th personalities of a long line of interesting editor commencing with William Mackenzie, at that tim Andersonian professor of anatomy and surgery in th University. The opposition to the journal in its earl days was conducted on very similar lines to thos which were adopted by some of the early rivals t THE LANCET, and the use of nicknames was similarl employed. The short-lived *Glasgow Medical Examine* which had a yellow cover, was particularly seve upon the *G.M.J.*, but the "Mustard Plaster," as was dubbed, proved unlucky in its criticisms, f one of the principal sources of grievance against th *G.M.J.* was its support of Lister and Lister's do trines. We note here, with complacency, that TH LANCET is adduced, under a very dignified sobrique as being on the side of the angels, its pages havin been "open to the insertion of every communicatio of the Professor on the extraordinary facts of th antiseptic and atmospheric germ killer." We do no attempt here to do more than note the appearanc of this extraordinarily interesting centenary issue the articles form not only a domestic history of rea importance, but in many respects a valuable revie of our science throughout the period. The editor an his collaborators deserve hearty thanks and no les hearty congratulations.

JOURNAL OF INDUSTRIAL HYGIENE.—January, 1928 Attention is directed by C. K. Drinker to the baro spirator of Prof. T. Thunberg, a new apparatu for artificial respiration, planned on entirely origina lines. The air is introduced into the chest, an removed, by altering the pressure of the atmosphere o the chamber in which the body is placed. When a ordinary person is placed in the chamber and th apparatus for rhythmically increasing and decreasin the pressure of the air is set working, he soon lose any need for using his own respiratory muscles an continues carrying on quite happily without an visible signs of breathing; nor, indeed, are th ordinary movements of inspiration and expiratio taking place. Barospirators must always be rathe cumbersome affairs, but they offer a possibility o treating cases of respiratory failure hitherto unap proachable. One such an appliance centrally situate could serve a large area for cases where a long struggl is evidently at hand, in cases of electric shock, ga poisoning, or drowning. The author considers tha the undoubted efficiency of the barospirator makes i certain to come into use.—The last article, which i contributed by P. Drinker, R. M. Thomson, and J. I Finn, describes experiments carried out for ascertainin the amount of inhaled dust which is retained. Th particles used varied in size from about 0·4 micron i one series of experiments to 0·15 micron in anothe and up to 6 microns in a third. Details are given o 41 experiments in tables and graphs, showing th amounts inhaled, exhaled, and retained. Th percentage retentions in all three suspensions average 55. The importance of this piece of research work i considerable as standards of dust contamination o atmospheres cannot be fixed for administrativ purposes unless it is known how much of the dus inhaled is retained. Curiously the amount retaine does not seem to depend on the size of the particle since the same proportion was retained in each of th series of experiments reported.

THE LANCET.

LONDON: SATURDAY, FEBRUARY 25, 1928.

EUGENICS AND A NATIONAL STOCK-TAKING.

FOLLOWING the annual dinner of the Eugenics Society, which was held in London last week, the Galton Lecture was delivered by Mr. C. J. BOND who asked his hearers to consider the present distribution of natural capacity in our population, implying by natural capacity the inborn physical and mental qualifications for good citizenship. Having adduced all the arguments, that can as yet be supported by facts, to show that our fluctuations as a race are unpromising in both respects, he pleaded for a national stock-taking in respect of mental and physical conditions and for the close coöperation of the medical profession in the collection and collation of data. Mr. BOND began his address by outlining the factors which had led to the decline of earlier civilisations, and followed well-known lines in showing that a cyclical process of periodicity is a marked feature in the life-history of civilisations and of races, as it is in that of the individual organism. This may be regarded as an essential message of history, but it is not easy to keep in mind the analogy between the growth, the perfected maturity, and the decline of the individual and the similar rising and falling of a dynasty or even a nation. Daily and personal experience makes the sequence easy to appreciate in contemporary individuals, but a historical sense, and no less a historical prescience, are demanded in order to gauge the measure with which the race conforms to the individual pattern. The progression and retrogression of the mass are more complicated than anything that occurs in the individual, because society goes neither forwards nor backwards as a symmetrical whole; its physical development usually precedes its mental development with the result that the finest artistic manifestations of the race may occur at an epoch when the accumulation of wealth is marked, but when its sources may already have begun to fail, so that the greatest average level of well-being may no longer exist. Further, as the Galton Lecturer showed, an inverse relationship between a high degree of specialisation such as is implied by great material prosperity and the reproductive capacity seems to be the fundamental characteristic running throughout life; in other words, those who best exemplify the culture of the race are those who present the least chance of increasing the value of the stock. Just as the more highly specialised brain cells in the individual lose the power to reproduce themselves, so the fecundity of more highly specialised groups in any community fails, and this fact, apart from its general genetic interest, has an intimate bearing on racial decline. This conclusion is of course debatable for one reason; we have not yet full knowledge of the part that is played in family statistics by voluntary control.

The general message which the Galton Lecturer delivered, and supported by evidence in many directions, is that the life of a nation is the expression of hereditarily transmitted racial groups of mind and body, and the subservient position which all that is usually called environment appears to play in that message is explicable by including under the head of environment many and various circumstances which may trace an origin to social heritage. Even a casual consideration of these circumstances proves that national life, as influenced alike by nature and nurture, must be renewed from below upwards, if only because the issue of the higher strata of society is too small in bulk and that of the lower strata is too large; the intermingling process takes place chiefly in the middle strata which represent the average citizen and thus form the bulk of the population. In respect of this position Mr. BOND compared the fecundity of the lowest social groups—those including mental defectives, habitual paupers, and innately criminal—to the phenomena of the parasitic cancer cell in the individual organism, where the cells multiply, but multiply in fulfilment of no special or useful purpose, until by their very multiplication the death of the whole organism is brought about. Regarded in this way racial decline may be called the direct biological effect of breeding from degenerate and inferior stocks, the decline in highly organised communities being aggravated by the fact that the worthier citizens, by as much as they have to bear the burdens laid upon them by the unworthy, are by so much the less fitted to meet their own responsibilities. This is the position in which the Galton Lecturer conceived that the British race stands to-day, and he summarised the evidence, both weighty and many-sided, which he thought pointed to the occurrence of deterioration in the mental and bodily qualities of our people. His words will appear in full in the April issue of the *Eugenics Review*. Medical men do not need to be reminded how far Mr. BOND'S thesis is supported by the Army recruiting statistics, in particular those of 1903, by the report of the Inter-Departmental Committee on Physical Deterioration which appeared in 1904, by reports from the Board of Control on the numbers of insane and mentally defective persons, and by the Galloway Report to the Ministry of National Service on 2½ millions of men of military age in Great Britain in 1917 and 1918. The lesson of all these reports is the same in essence—we are far from eugenically perfect.

Any conclusion that a real deterioration in physical and mental qualities is going on in certain sections of the population, and by a process of infiltration is producing results which will multiply in geometrical progression, makes the proposition for a national stock-taking into an urgent demand. And the outcome of an organised numbering of the people, if the investigation was full and thorough, might put a more cheerful complexion upon the future. It is reasonable to believe that many of the ills whose existence cannot be contradicted are more sporadic than general, and further, that vicious processes may often be found in a condition where well-directed methods can lead to their arrest. It is an inspiration of hope rather than one of fear that will lead the medical profession to support the desire of the Eugenics Society for a national stock-taking, while in securing the right evidence the coöperation of doctors must be of paramount importance. In describing the kind of census needed Mr. BOND suggested that inquiry into the distribution of natural capacity would be assisted by the inclusion in the census schedule for 1931 of the various questions of genetic or racial importance which had a place in the schedule for 1911, while more facts bearing on racial make-up should be brought to light by birth registration. Intensive inquiry, he thought, could be carried out in certain representative samples from children of school age, and Sir GEORGE NEWMAN'S reports to the Board

of Education have shown for many consecutive years how valuable the information obtained in this way must be. But we have to recollect that the school-children of the nation are themselves divided into two classes which are not comparable—those who are educated by the State and those who are not—that is to say, the children of the fruitful classes and the children of the more or less sterile classes, and again the difficulty appears, which follows on our ignorance as to how far the sterility is a matter of germ plasm, and how far of some deliberate interference. The factors already outlined as leading to this main difference as far as numbers are concerned will have to be taken into consideration when age-groups of the whole young population are being compared, and there will be ample room for unsound deductions if too much stress is laid upon the concinnity of the records. Here medical guidance will be particularly useful, because alike of the levelling character of disease and of the necessary acquaintance of the medical profession with the family history and domestic environment of all strata of society. We hope, therefore, that the Eugenics Society may receive active recruits from the medical profession, for the objects of the Society, while of supreme national concern, can be particularly advanced by medical effort. It may well happen that the progress which is taking place along so many lines of therapeutic research, when reflected in a national stock-taking, would lead to less gloomy views than those of common prophecy.

DOES INSULIN SAVE LIVES?

IN this country the experience of the last three years points strongly to the value of insulin as a means of reducing the death-rate from diabetes. This was made clear in a series of instructive graphs, which appeared in our own columns a few months ago,[1] based upon the Registrar-General's statistical review of England and Wales for the year 1925. But there was in these graphs one rather striking exception to the fall of the death-rate from diabetes—namely, the part of the curve dealing with women aged 55 and over. Why, it may be asked, should this curve not have followed the general course? Has there been in recent years such a reaction against the food restriction imposed during war-time as to account for the failure at higher ages to secure the reduced mortality shown in the young? The optimal diet in diabetes, as was pointed out in an annotation last week, is a matter on which opinions differ; and though the use of insulin has led to a relaxation in the diets recommended for cases of severe diabetes, there are facts, such as those set out by Prof. I. M. RABINOWITCH, which forcibly suggest the importance of encouraging abstemiousness amongst diabetics. Overfeeding in elderly people, and especially in elderly women, however, may not be entirely responsible for the relatively unfavourable course of the diabetic death curve at ages over 55, for it would be incorrect to certify all deaths in elderly people with glycosuria as due to diabetes; at long last even the diabetic must die. Considerations such as these lend interest to a further paper[2] by Prof. RABINOWITCH, giving the results of the experience of the use of insulin in the Montreal General Hospital for the years 1921–27 inclusive.

In this Montreal investigation all cases not under constant observation were excluded from consideration because it could not be assumed that these patients had followed treatment. The remainin 1316 admissions, on which the study is based, for a fairly representative sample of the general popul tion of diabetics, in regard both to age and sex. number of patients were neither seen nor heard after leaving the clinic. It can neither be assume correctly that these are all alive or all dead. Th author overcomes this difficulty by calculating bot a "known" and an "assumed" case-mortality rate in the first instance those missing are assumed to b all alive and in the latter all dead. The large majorit of the cases, however, were under constant super vision. In 1921, before the introduction of insulin the "known" mortality was 11·5 per cent., and fe to 1·1 per cent. in 1927. A similar result is foun with the "assumed" rate. In 1921 this amounte to 15·4 per cent. and in 1927 to only 2 per cen Insulin, therefore, appears to have greatly decrease the mortality-rate from diabetes. To overcome th statistical difficulty of comparison of the results different years, in which the age-distribution of th cases admitted to hospital may be different, and a the same time to furnish a fair index of the mortalit among diabetics in comparison with that of th population generally, the author has calculated fo each of the years 1921–27 the number of deat which wonld have occurred in his population diabetic patients had they been subject to the gener rates of mortality pertaining to different ages, an has compared these with the actual deaths. Th ratio of actual to expected deaths gives a clear insigh into the effects of any particular disease on mortalit In 1921 the death-rate among diabetics was foun to be 535 per cent. of the normal, in 1922 it actuall increased to 660 per cent.; but with the more gener application of insulin treatment in 1923, the ra fell to 280 per cent. of normal, and in 1927 to 10 In other words, insulin, effectively used, seems to h able to effect a "cure" in the sense of placing th patient, as regards mortality, in a position equal t that of the general population. Examination separate age-groups reveals the fact that, althoug the disease was and still is much more fatal in ear life, the decline in the case-mortality with the applic tion of insulin is greatest at these ages. Whereas in pre-insulin days, the ratio of actual to expecte deaths at ages under 20 was more than seven tim as great as the ratio at ages 40–60 years, since insul treatment was introduced the ratio at ages und 20 is barely three times as great as at 40–60 year The risk of performing surgical operations for co ditions arising during the disease can, moreover, effectively minimised by the exhibition of insuli Prior to its general use, in 1921 and 1922, 21 operatio were performed with 8 deaths, a case-fatality 38 per cent. In 1925 and 1926 there were 76 operatio with only 4 deaths, a case-fatality of only 5·2 per cen Diabetic coma was responsible for 50 per cent. deaths in 1921–22, whereas in the insulin perio 14 per cent. only were due to this cause.

Results such as these provide a striking contra with the gross recorded mortality from the disea among large populations in England and Wales, well as in Canada and the United States, where t recorded death-rate has in many instances shown actual increase. Classification by age-groups mig give the figures a different complexion, whilst t greater attention paid to the disease, improv methods of diagnosis, or an actual increase in t incidence of diabetes may all be playing their pa Nevertheless a discrepancy seems to remain betwe what insulin can do and what it actually does. Pr RABINOWITCH concludes that either the drug is n

[1] THE LANCET, 1927, i., 1365.
[2] Canadian Med. Assoc. Jour., 1927, xvii., 1415.

being used when it should be, or, if it is used, it is not used properly. Of these, he believes the latter to be the more important factor.

CARE OF THE MENTALLY DEFECTIVE.

THE Mental Deficiency Act, which was passed without opposition at the end of the last Parliamentary session, is a small one of only 11 sections; it is nevertheless of considerable importance to local authorities as well as to all medical practitioners who may be called upon to deal with mental defectives. We therefore welcome the explanatory circular No. 702 which has just been issued by the Board of Control. The Act is an amending one, its main purpose being to remove certain difficulties which have been experienced in the practical working of the principal Act since this was passed in 1913. Many of these difficulties centred round the definition of mental defect, and undoubtedly the alterations of chief importance to the medical profession are those which relate to such definition. It will be recalled that in the original Act it was required that, before a person could be dealt with as a mental defective, the defect must have been present "from birth or from an early age." We believe the intention of these words was to ensure that other forms of abnormality, such as those arising from disorder or deterioration, should not be dealt with as mental defect. In many quarters, however, this purpose has not been appreciated, and the words have been interpreted literally and as meaning the first few years of life. This restricted interpretation has been found to result in the exclusion from the Act of many persons who are unquestionably mental defectives, and for whom its provisions were intended. For instance, all with practical experience of defectives are aware that while the lower grades of idiocy and imbecility are usually recognised without difficulty in the early years of life, it is far otherwise with those suffering from the milder grades of feeble-mindedness. In many of these the deficiency may not reveal itself until towards the end of the first decade, or even not until adolescence. Again, it is by no means uncommon for mental defect to be brought about at these later ages by injury or disease of the brain. Common examples of this occur in the various forms of meningitis and encephalitis, as well as the arrest of mental development induced by epilepsy. During the past few years some hundreds of children have been rendered mentally defective by encephalitis lethargica; but, as the original definition stood, it was found impossible in many cases to deal with these as defectives and to secure their admission to institutions under the Act, although such institutions might afford the most suitable form of treatment. In the Act of 1927 the words "from birth or from an early age" are deleted, and there is given for the first time a definition of mental defectiveness—viz., "a condition of arrested or incomplete development of mind existing before the age of 18 years, whether arising from inherent causes or induced by disease or injury." This definition must, of course, be read in conjunction with those of the four classes of defectives which precede it; but there is no doubt that the changes will go a long way towards remedying the difficulties we have alluded to, as well as towards making clear who are, and who are not, defectives.

As the circular points out, the essential criterion of mental defect is not a defect of intellectual capacity, as this term is usually understood; for mental defect may exist in persons of considerable intellectual capacity. It is an incapacity for efficient social adaptation of such kind and degree as to render the person in need of care, supervision, and control. A person who suffers from any defect of mind, arising before the age of 18 years, which is sufficient to necessitate external care is a mental defective within the meaning of the Act. It may be pointed out that the designation of the fourth class has been changed from moral imbeciles to moral *defectives*, and that the words "on which punishment has had little or no deterrent effect" have been deleted from the definition of this class. No doubt this change will be an advantage; indeed, we are inclined to regard it as somewhat unfortunate that the opportunity was not also taken to redraft the definition of ordinary imbeciles. They are still defined as "incapable of managing themselves or their affairs"—a perfectly true definition, but one which conveys a somewhat misleading view of the marked incapacity of this class. The remaining sections of the Act to which the circular draws attention are either drafting amendments or administrative changes. The most important of these may be briefly referred to. Although the principal Act permitted parents in a position to pay fees to place their defective children in suitable institutions, it made no provision for such as were unable to pay fees to do this, unless it could be showed that these children were "neglected, abandoned, or without visible means of support, or cruelly treated." This was found to be a hardship, and it is now remedied by allowing such children to be dealt with on the representation of their parents or guardians to the local authority that they are in need of care or training which cannot be provided in their homes. Another disadvantage existed in the case of children about to be discharged from special schools. These pass out of the jurisdiction of the local education authority at the age of 16 years, and, if their supervision is to be continued, they must be notified to the local (control) authority. But the education authority has hitherto only been empowered to do this in the case of children needing to be sent to institutions or placed under guardianship. In many cases neither of these courses is necessary; all that is needed is supervision, and Section 2 of the Act now enables the child to be notified for this purpose. The circular draws attention to the difficulty which has sometimes been experienced in the case of mental defectives coming before the courts. The court is empowered to direct that a petition be presented to have the defective sent to an institution; but where it has been impracticable to do this, or where the petition has been dismissed, there has hitherto been no provision for the detention of the person until the case could be suitably disposed of by the court. Section 5 provides the machinery necessary for this purpose. Section 7 of the Act imposes a new obligation upon local authorities. Hitherto they have only been required to provide suitable training for defectives in institutions; they now have the duty of providing this for defectives who are under guardianship or supervision. They may, however, be relieved of this obligation if they satisfy the Board of Control that there are adequate reasons for exemption. Hitherto local authorities have only been able to receive into their own certified institution patients from their own area; the Act now enables them to receive those from any other local authority, and this is a provision which may be of decided advantage to small authorities, who will thereby be enabled to board out their cases until such time as they can provide their own accommodation.

While the amendments and additions to the Act, to which this circular directs attention, will be of especial concern to local authorities and to medical men holding

official posts, some of the changes, particularly those of definition, are of importance to the medical profession as a whole. The time has arrived when few general practitioners can afford to be without an adequate working knowledge of mental defect in its relation to education, conduct, and citizenship. It is quite certain that more general use might be made of the course of instruction arranged by the London University Extension Board in coöperation with the Central Association for Mental Welfare, and intended primarily for medical men holding official positions. The course is based on the requirements of the syllabus for the University diploma in psychological medicine. Series of lectures will be given by Dr. A. F. TREDGOLD, Dr. F. C SHRUBSALL, Prof. CYRIL BURT, and Dr. NORWOOD EAST, and the clinical work will include visits to special schools and residential institutions. A certificate of attendance is granted. The next course will be held from May 14th–19th at the University, Imperial Institute-road, South Kensington, and communications in regard to it should be addressed to Miss EVELYN FOX, University Extension Department, at that address.

Annotations.

"Ne quid nimis."

TESTIMONIAL TO SIR DAWSON WILLIAMS.

ALLUSION was made recently in these columns to an admirable intention to present a testimonial to Sir Dawson Williams, who lately retired from the Editorship of the *British Medical Journal*, after 30 years in that position and nearly 50 years close connexion with the editorial work of the paper. There is a widespread feeling that the occasion should not pass without some recognition, from the profession as a whole, of his long and distinguished services to the science and practice of medicine. We understand that it is accordingly proposed to issue a general appeal and to send to the medical press a first list of supporters for publication on March 10th. Those wishing to be included in this list are invited to send their contributions, not later than March 3rd, to Sir StClair Thomson, who has been asked by the provisional Executive Committee to act as honorary treasurer. Though the Committee does not wish to limit the amount of individual donations, it hopes that the sum eventually received will include a large number of contributions of two guineas or less and so represent the profession generally. Cheques should be made payable to Sir StClair Thomson and sent to 64, Wimpole-street, London, W. 1, and the envelopes marked "Dawson Williams Testimonial."

CHOLERA IN IRAQ.

THE epidemic of cholera which broke out in Iraq in the summer of 1927 gave an opportunity to test the efficiency of prophylactic inoculation, of measures for the purification of the drinking-water, and of the working of quarantine restrictions. Happily full use was made of this opportunity, as may be seen from the report [1] of Dr. C. P. Thomson, president of the Egyptian Conseil Sanitaire. On July 20th the medical officer of health of Basra observed two suspicious cases, and several were found at the same time at Abbadan, but it was not till July 23rd that a bacteriological diagnosis was made. It says much for the promptness of the medical officers concerned that travellers who had left the infected area on the morning of the 23rd were received on the morning of the following day at the aerodrome in Cairo with unusual attention by its quarantine medical officers. The epidemic in Abbadan served to demonstrate once again the importance of a contaminated water-supp in the spread of this disease. Among the 80 inhabitants supplied with filtered water there we only eight cases of cholera, whereas among t remainder, numbering 22,000, whose water-supp was not filtered, there were 273 cases. Accordi to a short note addressed to the Office Internation by Dr. Djavad Asthiany, the epidemic was suppress by Oct. 25th, thanks to the provision of sanita cordons and vaccination. More than 40 per cen of the inhabitants in the infected towns and t adjoining areas were vaccinated, a supply of vacci sufficient for 700,000 doses having been provide Dr. Thomson notes that, although much importan was attached to vaccination, sanitary cordons we found to be necessary, and the movements of no vaccinated persons on the principal lines of communic tion were strictly regulated. The total number cases notified up to Nov. 5th in Iraq was 103 among which there were 756 deaths. Two new lines communication have now to be considered in connexi with any outbreak of cholera in Iraq. The fir is the air route from Cairo to Basra by Palesti and Baghdad. The weekly aeroplane takes 12 hou from Cairo to Baghdad and 27 hours from Cai to Basra, for it does not fly by night. When t route has been extended to Karachi, a traveller fro an infected centre in India may, in three and a h days, find himself on board ship at Port Said. T other new line of communication is the motor-c route between Baghdad and Beirut, via Damascu The journey takes only 29 hours, and the traffic this route is increasing continuously. About 2 travellers pass this way every week, and in 1926 abo 2000 pilgrims made use of it to reach Jedda These two new routes and the discovery of oil Iraq give point to the remark recently made th Iraq has ceased to be oriental and has come to part of Europe. It is fortunate that with the extended facilities for the transmission of disea there should be an effective quarantine netwo at points of landing. The medical authorities Syria control the motor traffic, of which Damasc is a centre, and the aerial traffic is under strict medic supervision in Palestine and Egypt. In order n to hamper the development of these new lines communications, the medical authorities in Egy intend to make sanitary restriction as light as possib compatible with safety. Travellers coming fro infected regions, reaching Egypt by aeroplane, a wishing to catch boats bound for European port may continue their journey without observation quarantine at the aerodrome, provided they can sho that they have received two injections of a chole vaccine, the second of which was given at lea six days earlier, and provided also that they loo quite well. The medical officer of the ship by whi they travel from Egypt must be told where th came from.

GAIT, NORMAL AND ABNORMAL.

EVER since the days of the brothers Weber, who book on the human mechanism was published mo than 90 years ago, physiologists and surgeons ha from time to time made attempts to analyse a record the movements of the body and limbs locomotion. Some of these attempts have been fair successful, especially since instantaneous photograph has come to the observer's aid, but the practical valu of the records has been small. During the war very elaborate and efficient cinematographic apparat was constructed in the experimental workshop of t Ministry of Pensions and excellent photographic char were obtained of normal gait and also of the gait of man wearing an artificial limb. These records we described and commented on by Mr. R. C. Elmslie a paper published in the *St. Bartholomew's Hospit Journal*,[1] and the charts and photographs were repr duced by Mr. Muirhead Little in his book on Artifici Limbs.[2] Excellent as these photographs and tracin

[1] Office International d'Hygiène Publique, Bulletin, vol. xix., No. 11.

[1] September, 1920. [2] 1922 (H. K. Lewis).

were technically, they were not of much value to surgeons and limb-makers in the re-education of the amputee, or for perfecting the mechanism of artificial limbs. The subject has been re-examined lately in the United States by Dr. R. Plato Schwartz, of New York, and Mr. William Vaeth, who brought an instrument devised by them and called a basograph before the Section on Orthopædic Surgery of the Seventy-eighth Annual Session of the American Medical Association, last year.[3] Dr. Schwartz does not seem to be aware of the cinematographic work that was done in this country during the war, a knowledge of which might possibly have affected his conclusions. His apparatus consists essentially of a pendulum and a recording tambour, which are enclosed in a case and carried on the subject's pelvis. The tambour is driven by a modified Cine-Kodak motor but the details of the whole are too elaborate to be described in a short note. The resulting graphic records resemble in appearance those of a sphygmograph or a barograph. The orthopædic surgeons who took part in the discussion of this paper, while all appreciating highly the industry and ingenuity displayed by the inventors, seem to have been doubtful of its practical value in guiding treatment. Tracings of limping gaits, although they may show definite aberrations from the tracings of normal gait, yet will no more tell us in what part of the complicated neuro-muscular-articular mechanism the fault lies than will the eye of the surgeon. Nevertheless all knowledge is to be welcomed for its own sake, and no man can tell at first in what way it may be ultimately useful. Dr. Schwartz has been working on the right lines, more on the traditions of Aristotle than of his philosopher namesake. We regret that death has deprived us of the former doyen of New York's orthopædic surgeons, Dr. Virgil P. Gibney, who would no doubt have supported Dr. Brackett, of Boston, in encouraging Dr. Schwartz.

PEPYS AS A MEDICAL COMMENTATOR.

Pepys's versatility, along with his frankness, humour, and zest in life, have made him immortal. There are few phases of life in the seventeenth century upon which he does not touch in his diary, and of those outside his own occupation in the Navy Office medicine is one of the most prominent. It is true that, as Lieut.-Colonel W. P. Macarthur remarked in a most able address at the social evening of the Royal Society of Medicine last week, he was considerably more interested in fair ladies than in any number of grave doctors of physic, but his journal abounds in medical references, and contains, together with that of John Evelyn, a considerable body of information on the medical knowledge and practice of the time. The high regard in which he held the science is in surprising contrast to the contempt and distrust freely expressed by many other writers. It may be that Pepys owed the preservation of his sight, after he had resigned himself to its loss, to the counsels of his medical friends. First-hand experience, even of the terrible surgery of those days, did not destroy his goodwill to the profession, for he used to carry about with him and exhibit a calculus "the size of a tennis-ball" which he had had removed from his bladder. Had he lived in these days, suggested Colonel Macarthur, he might have found this hobby somewhat exacting; he would probably have carried on him, besides his stone, a pair of tonsils and an appendix in another pocket, a handful of teeth among his loose money, and a section of large intestine knotted round his waist.

Pepys's observation of contemporary epidemics was very keen. The earliest one he mentions was in the summer of 1661, "a sort of fever" which spread over London and its surroundings. He connects it with an unusually warm autumn and winter, which in fact caused Parliament to appoint a day of fasting and prayer for more seasonable weather. From accurate records made by Sydenham at the time, it seems probable that the disease was malaria, and, as Colonel Macarthur reminded his audience, it is only in the light of recent observations that we can appreciate his accuracy. The artificially induced malaria used to treat general paralysis of the insane begins as a continuous fever and only later does it become intermittent. Sydenham says that intermittent fevers do not at once put on their full shape and are at first hard to distinguish from continued fevers; only when their violence is a little quelled is their intermittent nature apparent. Pepys could, of course, hardly help noticing small-pox, and Colonel Macarthur quoted at length his account of the tragic disfigurement of the lovely Frances Stewart, Duchess of Richmond, who found favour, like practically every woman of those days with a claim to good looks, in the sight of the King, but whose character the speaker tellingly defended from the calumny with which it has been ignorantly defiled. Small-pox in the days of the Stewarts was a very serious pest indeed. Among its victims it numbered many of the royal family, and it ultimately cleared the path of the Elector of Hanover to the English throne. In Tudor times it was a comparatively trivial disease, often confused with measles, and Colonel Macarthur quoted the pathetic, bewildered protest of one Master Robert Langton, who found himself about to die of this childish complaint "which he never thought should have come to pass, seeing that it is but the small-pox." The mild variety of to-day strongly suggests that of the Tudor period, and it is interesting to speculate whether this form, like that of Pepys and Evelyn, will revert to its one-time malignancy.

Pepys's account of the plague is perhaps the most read part of his diary, and is certainly one of the most valuable contemporary accounts extant. Colonel Macarthur enriched his extracts from Pepys with prints of dead-carts and "searchers," and facsimiles of burial records of the period, showing columns of names monotonously franked with the ominous initial "P." As everyone knows, Pepys's outbreak was the last of the historic epidemics, for a revival of interest in sanitation condemned for ever the filthy streets and the "over-building" which gave the plague-rats a favourable soil in which to multiply. Pepys, who was no coward, stuck at his post until the deaths were numbering 6000 a week, and only quitted when his brewer, butcher, and baker had succumbed and he could no longer obtain supplies. In fact, Colonel Macarthur made it quite clear that Pepys was a much finer man than modern critics and dramatic representations make him out. He was an indefatigable, conscientious worker, a most efficient public servant, and an honest one by the standards of his time. Against any word condemning him on this score must be set the fact that the Crown owed him £28,000, not a penny of which was ever paid. If he had not possessed exceptional qualities of head and heart he would not have been President of the Royal Society, a Master of Trinity House, a Baron of the Cinque Ports, a Member of Parliament, and the esteemed friend and correspondent of men like Sir Isaac Newton, John Evelyn, and Hans Sloane. Medical men to-day, as in his own times, have good reason to hail him as a friend and sympathiser.

THE ASSESSMENT OF PUNISHMENT.

Dr. Norwood East's conspicuously reasonable lecture on Problems of Forensic Psychiatry, of which a full report is given in another column, may be regarded as a fair statement of the greatest common measure of agreement between the medical and the legal view. Sir Ernest Wild's observations at the conclusion of the lecture will also be read with the attention which any remarks of the Recorder of London deserve. When Sir Ernest Wild declares that to admit the defence of uncontrollable impulse would make justice impossible, he must be left to argue the point with the other learned lawyers who were members of the Atkin Committee. Another of his observations is worth emphasising. It was essential, he said, that the medical witness should speak from personal knowledge and

[3] Jour. Amer. Med. Assoc., 1928, i., 6.

experience ; in so many cases the wealthy person went to a doctor for the first time in order to get him as a witness. Sir Ernest Wild had in mind perhaps the class of case where a rich woman is prosecuted for shop-lifting and all the resources of all the professions are mobilised on her behalf. But it is hard to suppose that in such a case the court is unable to disentangle the relevant and first-hand evidence from mere irrelevance and hearsay. If the rich person's riches produce such an overwhelming weight of expert testimony that the scales of justice cannot be held even, the occasion would seem to be proper for the court to avail itself of existing facilities—or, if no facilities exist, to ask Parliament to furnish facilities —for summoning to its aid an expert assessor. The Recorder of Chichester lately expressed the opinion that there was no need for medical assessors in courts of law ; he preferred to obtain medical evidence from a medical expert in the witness-box. If, for want of special knowledge, the Court finds itself unable to cope with an overbearing or partial expert witness, the use of an assessor seems a simple remedy. Judges in Admiralty are not above consulting assessors who are experts in seamanship ; in ecclesiastical appeals to the Privy Council bishops may come and assist ; in patent and other cases assessors are found useful. Why is it only the medical assessor who is not worth summoning ? Has the limited use of assessors and referees in workmen's compensation proceedings proved so disastrous an experiment ?

INFLUENZA AND GENIUS.

Daniel Webster years ago said that influenza was the " crux of epidemiology," and it is well known to-day that the syndrome is no new disease, but an ever-present endemic, smouldering in the intervals of its periodic outbursts. Its great prevalences are favoured by war, famine, overcrowding, and free communication with patients in the early stages. While crowding and communication have hugely increased of recent years, we are able to put up against them the improved feeding, housing, cleanliness, and medical and nursing care that have succeeded in reducing the mortality during the last century and a half. This year there has been no serious epidemic, and it seems likely that the danger period will pass without more than sporadic outbreaks. This fact, however, must never induce forgetfulness or relaxation of vigilance, and the two Chadwick lectures delivered on Feb. 16th and 23rd by Sir William Hamer come as timely reminders that the enemy never sleepeth. The name " influenza" was first used in 1743, but Sir William, in common with other epidemiologists who have recently studied the question, followed its course from the " English Sweats " of 1485 and onwards, which were accompanied or followed by convulsive ergotism, epidemic agues, volatile typhus, and encephalitis or brain fevers. He traced the cycles of influenza from Willis's epidemic of 1658 through the intermittents of 1661–64 and of 1673–4 with an interval of depuratory fevers, to Sydenham's great outbreak in 1675, followed, like its predecessor, by intermittents between 1675 and 1679, a phase of depuratory fevers and more intermittents from 1685 to 1686. In 1688 came another outbreak of true influenza as described by Molyneux and Harris.

In the eighteenth century the London Bills of Mortality showed the sudden universal colds appearing on the crests of three- to six-year waves of fever, and more recent epidemiological records make it possible to trace an undulatory incidence with wavelengths ranging from one- to two-thirds of a year in pandemic times up to five or seven years in the troughs. In Sydenham's " Postcript to his Tractate on the Dropsy " we find what Sir William terms a " pearl of great price " in his unmistakable description of a cerebro-spinal epidemic of the seventeenth century. Of this new fever he says " it may be a spirituous and subtle beginning of something else, the germ perhaps of the depuratory fever now exploded, but which the plague followed." It was in fact, the precursor of the influenza of 1688, jus as the London epidemic of 1915 was the precurs of the influenza of 1918. The depuratory fever, th winter fever, the comatose fevers—all were phas of one abiding influence. Bowels, brains, and lung were successively attacked, but Sydenham mak it clear that the diarrhœa, stupor, and pneumoni were all symptomatic of one stationary fever, an that the trailers to that epidemic were comparab with the trailers to the 1661 epidemic as describe by Willis.

We can thus view the present prevalence of epidem disorders of the nervous system as an expression the downward curve of the great influenza wave 1918, and Sir William brought evidence to show tha influenza years have always inflicted special damag upon the human nervous system, and that the ev effect is most easily discernible in the age-group 0–2 The index of brain injury inflicted by the influenz epidemics of the last few centuries was found t vary from the lowest limit of less than 1/20 to th highest limit of 2/5. No epidemic disease of whic precise statistics are available causes such ravag in men of genius as those induced by the influenz group. In bygone times it was a commonplace tha sweat, influenza, and volatile typhus affected the " ge aisés," the " people of the court," in distinction t the ordinary epidemics which usually took toll the poor, the badly housed, and the ill-nourishe So ancient an authority as Fracastor, 1483–155 found an explanation for this. " From that co tagion," he says, " which spreads from one pers to another, the well-to-do are able to guard then selves, by reason of facilities at their disposal whi common people lack, but from that contagion whi is communicated through the air, the well-to-do a less able to protect themselves than the poor are, f that which may affect all alike does affect them wh are more delicate and less robust, more full-blood and more humid, on account of their luxury an quiet mode of life. The people, on the other han are more robust and less humid, as being hard worked and of more sparing way of living Sir William concluded definitely that the wid spread prevalence of influenza has constituted menace to intellectual progress. It has left its ma on many men of genius : Chopin, Sterne, Swif Carlyle, and William James, for example. Mar remarkable men have lost their lives through influenz from Shakespeare and Cromwell onwards, and th ravages of the cerebro-spinal trailers are causing much anxiety to-day. There is a tendency for m of genius not to be born during years of prevalen of influenza. This may merely reflect the increa of miscarriages and stillbirths, or may indicate son damage to the brain of infants who survive. S William Hamer urged that the " intellectual climate of to-day demands a passionate interest in gener principles as well as in stubborn facts. As Martine pointed out, " If you have the wrong instrumen the object of your search will elude you." The stre laid on bacteriological causes of disease led to a d regard of the great Sydenham's epidemiologic theories of prevalence, and to these we must retu if we are to grapple successfully with the proble The world can ill afford to lose men of genius in the difficult times, and it is conceivable that the wh future of civilisation may depend in a large mea u on a fight against that protean monster, the influenz

CONJUGAL TUBERCULOSIS.

THE vexed question of tuberculous infection betwe husband and wife, like other problems in tuberculos is made still more difficult owing to concentration major manifestations of the disease as it occurs a minority of the population with low resisti power, coupled with an almost entire neglect the manifestations of tuberculosis as it occurs in t highly resistant majority. In a recent issue of t *Journal of the American Medical Associati* (Nov. 19th, 1927), Dr. Arnold Minnig continues h observations on conjugal infection. His records cov

1888 married or widowed patients, among whom in 319 cases (16·8 per cent.), 181 female and 138 male, both consorts were found to have active tuberculosis or one to have active disease after the other had died of it. Of 104 widowed by the death of a tuberculous consort 50 (48 per cent.) had developed active tuberculosis, while 11 of the remaining 54 were "suspect." The sputum was examined in 179 of the 319 and in 94 of these tubercle bacilli were found. Dr. Minnig remarks that his figures are drawn from the poorer classes and would probably be too high for the general population; moreover, when consorts were not patients the patient's word was taken as to the mate's tuberculosis. Women, it appears, are more frequently infected than men. Adult infection is regarded as proved; the author thinks it unreasonable to suppose that a patient who has overcome a childhood infection can never again be infected from the same or any other source.

Rist and Hautefeuille[2] remark on the rarity of conjugal tuberculosis. The authors have studied 31 cases of familial infection, including 25 of conjugal tuberculosis, and draw attention to the onset of disease in the majority of cases after removal of the source of infection, usually by death. The hardships following the death of the consort and the possibility of a terminal massive infection are reviewed, but grief and the psychic depression which it causes are considered the most important factor.

A STUDY OF ENDOCRINE BALANCE.

A BIOMETRICAL study of the size relationships of the glands of internal secretion, made by Frederick S. Hammett, is embodied in a paper recently published[3] from the Wistar Institute of Anatomy and Biology at Philadelphia. This paper deals with the weights of these glands (including the thymus) in unmated albino rats; the data comprise 121 of each sex and relate to weight only so that argument from relationships between weight to relationships between functional activity must be presumptive only. Disturbing influences of age and race were avoided as far as possible by use only of rats 150 days old, all descendants of a common pair. The weights of all these glands in both sexes were found to be positively related to general body-weight (though rather less so in the female than in the male), with the single exception of the thyroid. In the case of this gland the relationship in both sexes appeared to be positive only when the thyroid was below the general average weight, and negative when it was above. There were, however, less than 40 observations in either sex of the higher thyroid weights, and these negative relations are barely significant. There were considerable differences in the degrees of association shown between the glandular weights and body-weight, and also varying values were found for the changes in the intraglandular weight associations when body-weight is or is not kept constant, but it is not made clear why factors determining the general body-weight should, as the author implies, be more essentially "genetic" than those determining the variability of the weights of single organs. The main conclusion drawn is that although specific positive correlation was found between the weights of certain pairs of glands—e.g., adrenals and thyroids, adrenals and thymus and adrenals and gonads in both sexes, also pancreas and hypophysis, and pancreas and thymus in the males, and adrenals and pancreas, and gonads and hypophysis in the females, the relation is by no means general, and the author states "that these findings are not consistent with the idea that the glands of internal secretion are to be considered as a systemically specific functionally inter-related group in the normal organism." The adrenals were found to be related in weight to more of the other glands than any other single one of these, and especially so in the females. The higher association between adrenal weight and gonad weight in the females also suggests that the adrenals are more important factors in the females than in the males. The thyroid gland was more variable in weight than any of the others, the thymus next, and the rest of definitely lower variability. The method of partial correlation was used to find the "specific" associations between each pair of glandular weights—i.e., such association as is not common to that with body-weight and weights of other glands. Partial correlation is a useful tool, but it has its limitations, and the higher the order—i.e., the more variables are eliminated—the more assumptions have to be made or tested, and the common method followed here of only investigating the linearity of the relation between the original pairs of variables and not that of subsequent pairs of deviations makes the interpretation of the final results difficult, especially when, as here, five variables are kept constant. Nor do we feel that the evidence given justifies such a deduction as that with regard to adrenal weight and hypophysis in the males "a change in association is brought about by an increase in thyroid activity which is valid and negative in direction if the fifth order coefficients are accepted as they stand." It does not seem correct when investigating the effect of enhanced thyroid activity while restricting the observations to those with thyroid glands heavier than the mean in the case of the thyroid associations, to include all observations, whatever the thyroid weight, in finding the other associations used to get the partial coefficient. In an ideal case this might not matter, but the present case is not ideal, the numbers are limited, and some of the regressions are of doubtful linearity. The value given by this method for the correlation between the weight of adrenals and of the thymus for males, keeping constant thyroid weight above the mean, and body-weight—is 0·105, but when the same coefficient is found by the method we should prefer, using in all cases only those observations with thyroid weights above the mean, we get +0·245, an entirely different result. We should not, however, attach any great importance to either of these values, as there are not enough observations to find reliable partial coefficients in this range. Our general feeling is that the mathematical analysis has been pushed somewhat mechanically a little farther than the data allow, and that for the reasons given above great caution should be exercised in interpreting the higher coefficients, and the indications given by them looked on with reserve until independently confirmed by other observations.

[2] Archives de Médecine et de Pharmacie Militaires, 1927, cxxvii.
[3] Journal of Metabolic Research, vols. vii.–viii., Nos. 1–6, January, 1925–December, 1926.

MENTAL BREAKDOWN IN ADOLESCENCE.

FEW cases can be more distressing than those which are nowadays labelled acute schizophrenia. A young boy or girl, usually of great promise and at the threshold of a career, suddenly passes from apparently normal adolescence into a state of apathy, excitement, or depression. The change may occur a few days before an important examination or apparently arises out of an unhappy love affair, and the anxious relatives ask immediately what is going to happen. Unfortunately, the question is very hard to answer, and the discussion on prognosis, held at the Maudsley Hospital on Feb. 14th by the Section of Psychiatry of the Royal Society of Medicine, did not give much guidance to those who are faced with such a situation. Dr. G. W. B. James admitted that many of the patients, whose chances seem best, pass slowly but steadily into a hopeless dementia, whilst those who appear unlikely to recover often emerge rapidly from a stage of psychosis and are able to return not only to their homes, but to their work. Of 14 patients whom he had followed up, all from private mental hospitals, only five had had to remain under care, and of the nine who recovered five were actually able to hold a job. To describe such cases as dementia præcox is misleading, for a state of confusion, excitement, or depression is not necessarily associated with any degeneration of the mind; and a young person who has been through such an acute phase ought not to be branded for life as a dement. Dr. Percy Smith,

speaking from his exceptionally large experience, agreed with Dr. James that at present there was no means of arriving at a satisfactory prognosis. Our ignorance in this matter comes partly from not knowing the relative ætiological importance of such factors as heredity, overwork, emotional stress, septic foci, and unhealthy environment, all of which may play their part. Dr. A. A. Petrie remarked that the examinations which appeared to precipitate the attack were usually not of an exacting standard, and suggested that the cause of the trouble was the attempt to do too much. Such attempts—perhaps fortunately for the race—are exceedingly common in the adolescent, as, indeed, are all sorts of "abnormal" behaviour. There is reason, however, for taking them seriously, and ideally speaking, the child whose progress does not seem to be satisfactory should always be under the watchful though inconspicuous care of an expert, who can distinguish true danger-signals from developmental will-o'-the-wisps.

HEALTH OF THE ROYAL AIR FORCE.

DURING 1926 the average strength of the R.A.F. was 32,985 men, which was almost the same as in the previous year, and the statistics of illness are very similar.[1] Compared with the other ranks officers suffered slightly less from disease, but very much more from accidents, of which 112 proved fatal in the Force as a whole. Two-thirds of these occurred in flying, but although the number remains large, it is decreasing in relation to the number of hours flown. The mortality from disease was low, the chief causes being pneumonia and pulmonary tuberculosis, each of which caused six deaths. A small epidemic of diphtheria occurred in the neighbourhood of Halton in Buckinghamshire, and the 1742 apprentices at the station were Schick-tested and, where necessary, immunised. No case of diphtheria developed among them, but there was a small outbreak of scarlet fever, which seemed to be milk-borne. In Iraq, whence most of the cases of dysentery were reported, 31 carriers were found among the personnel handling food. In the same country there was an increase of malaria as a result of floods, and heat-stroke caused five deaths, four of the patients having hyperpyrexia and lingering on for many days. At one time the temperature was over 120°F in the shade, and humidity was high. In Iraq 130 patients were carried by aeroplane, 82 of them in air-ambulances. Food-poisoning did not occur because, it is thought, inspection is so careful. In the selection of personnel much reliance is placed on the "flying aptitude" apparatus, which measures reaction-times, and quickly gives an estimate of the probable efficiency as an aviator of a candidate or of an officer under training. This estimate is surprisingly similar to that reached by a good instructor after his longer period of observation. Tests of this kind also help good men to improve, and are of great use in estimating the degree of recovery reached by convalescents after slight concussions, showing when they may be allowed to fly again.

[1] Health of the Royal Air Force, 1926. H.M. Stationery Office.

THE HOSPITALS OF LONDON.

IT is now becoming widely recognised, as our correspondence columns testify, that any large decisions about the relations between voluntary hospitals and public authorities will have an important influence on the future of the medical profession, and as Dr. F. N. Kay Menzies pointed out at a council meeting of the Charity Organisation Society on Feb. 13th the problems involved are far too big and important to be dealt with on purely partisan or political lines. Speaking not as the medical officer of health to the London County Council, but rather as a private individual, Dr. Menzies reviewed the situation as he sees it to-day, and brought forward cogent arguments in favour of the coöperation which he believes necessary. Although, he said, nearly 70 p cent. of the voluntary hospitals were able to pay the way in 1926, as compared with 44 per cent. i 1920, there was an admitted shortage of 12,000 bed to meet which a capital expenditure of at least 8 millio pounds would be needed, and an additional mainte ance charge of 1½ to 2 millions per annum. There wa moreover, a steady increase in demand for hospit beds, owing to the constant introduction of ne methods of diagnosis and treatment, and it w evident that the burden of providing the require accommodation was becoming too great for t voluntary hospitals to bear alone. The burden wa in fact, being shifted, for whereas at the beginning the century the public health authorities were co cerned solely with problems of communal hygien they were now undertaking more and more the trea ment of the individual. The poor-law authorities London, including the Metropolitan Asylums Boar now provided nearly 80,000 beds for the treatment the sick, and public bodies undertook out of publ funds the institutional treatment of nearly five-sixt of the sick in London. If the Minister of Healt proposals for poor-law reform came into operatio over 100,000 beds would come under the single contr of the London County Council, who would then ha eight times as many beds at their disposal as we contained in all the voluntary hospitals of London. would be absurd, said Dr. Menzies, to suppose th such a change would not affect the latter, for witho coöperation it would mean, in the end, their extinctio Fortunately such coöperation was not impossible indeed it had already begun—and he was unable understand why a thoroughly practical scheme cou not be devised, by which the voluntary hospitals a the public authorities concerned with the preventi and treatment of disease might work harmonious together.

B.C.G. IN THE LABORATORY.

A FEW weeks ago[1] we commented on some Japane investigations on the power of B.C.G. vaccine protect guinea-pigs against tuberculosis, and it interesting to find in the *British Journal of Expe mental Pathology* for February an account of simil experiments by Dr. C. C. Okell and Dr. H. J. Paris of the Wellcome Physiological Research Laboratori Their object was to repeat Prof. A. Calmette's origin observations, and the work was divided into fo experiments, in which guinea-pigs were given B.C. intravenously or subcutaneously, and were lat tested for immunity to virulent infection. A peri of 5 to 12 weeks was allowed for the development this immunity, and suitable controls were employ throughout. On the whole the results may be regard as satisfactory, and Dr. Okell and Dr. Parish say th from their experiments "it seems clear that by mea of B.C.G. guinea-pigs can be partially and in so cases completely protected from infection with a do of virulent bacilli." There is no reasonable doub they consider, that the vaccine gave rise to a significa immunity, but they are not prepared to say that as means of prophylaxis B.C.G. proved better than oth vaccines which have had their vogue in the past. T best results were obtained in the last experiment, wh a minimal infecting dose was used, and in this gro 27 per cent. of the animals were completely protecte The vaccinated guinea-pigs either showed no reco nisable sign of tuberculous infection, or else we found to have generalised tuberculosis similar that seen in the controls. The vaccine itself nev seemed to produce any of the lesions of the disea during the period of experiment, but attention drawn to a statement by S. A. Petroff, A. Branch, a W. Steenken,[2] that they were able to obtain virule "variants" from cultures of B.C.G. This sugges that the attenuated organism is capable of dangero reversion, but Dr. Okell and Dr. Parish, in view of t fact that it proved harmless in their own experimen

[1] THE LANCET, Jan. 14th, p. 92.
[2] Proc. Soc. Exp. Biol. and Med., 1927, xxv., 14.

regard it as representing "a move in the right direction as compared with the partially virulent strains with which most of the sound work of the past had been done."

AMONG 15 candidates whose names have been recommended for election as Fellows of the Royal Society are Dr. Major Greenwood, professor of epidemiology and vital statistics at the London School of Hygiene and Tropical Medicine; Dr. C. H. Browning, professor of bacteriology in the University of Glasgow; Mr. David Keilin, lecturer in biology, and Dr. G. V. Anrep, lecturer in physiology in the University of Cambridge; and Mr. S. B. Schryver, professor of biochemistry at the Imperial College of Science and Technology.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Comdr. A. Davidson is placed on the Retd. List with the rank of Surg. Capt.

To be Surg. Lts.: R. A. Graff, T. L. Cleave, G. D. J. Ball, E. S. Bolton, S. L. Lord, and W. D. M. Sim.

The following appointments have been made:—Surg. Comdrs.: L. S. Goss to *Suffolk*; T. J. O'Riordan to *Vulcan*; R. P. Ninnis to *Pembroke*, for R.N. Barracks, Chatham; and W. H. Murray to *Frobisher*, and as squadron medical officer (on transfer of flag). Surg. Lts.: J. B. Patrick to *Frobisher* and A. S. Burns to *Calliope*.

ROYAL ARMY MEDICAL CORPS.

Lt.-Col. H. F. Shea, having attained the age fixed for compulsory retirement, retires on retd. pay and is granted the rank of Col.

Capt. W. W. S. Sharpe to be Maj.

Capt. C. H. C. Byrne to be Maj. (Prov.).

A. F. Downie to be temp. Lt.

The undermentioned to be Lts. on prob.: C. L. Day, R. T. L. Archer, D. R. W. Burbury (late Surg. Lt., R.N.V. Res.), P. J. L. Capon, P. Dwyer, K. McNeill, M. R. Burke, P. W. A. Agnew, and J. C. Gilroy.

Lts. C. L. Day and J. C. Gilroy are secd. under the provisions of Art. 205, Royal Warrant for Pay and Promotion, 1926.

TERRITORIAL ARMY.

Col. G. W. Miller vacates his appt. of A.D.M.S., 51st (Highland) Div., on completion of tenure.

Col. J. H. Hunter to be A.D.M.S., 51st (Highland) Div.

Lt.-Col. (Bt. Col.) C. L. Isaac, from the Gen. List., R.A.M.C., T.A., to be Col.

Lt. Col. A. R. Moodie, M.B., to be Bt. Col.

Lt.-Col. F. T. Rees, from Gen. List., R.A.M.C., T.A. (Res. of Off., to be Lt.-Col. and to comd. the 158th (Welsh) Fd. Amb., vice Lt.-Col. (Bt. Col.) C. L. Isaac.

Maj. H. G. F. Dawson, having attained the age limit, is retd. and retains his rank with permission to wear the prescribed uniform.

Maj. S. R. Gibbs resigns his commn. and retains his rank with permission to wear the prescribed uniform.

Capt. (Bt. Maj.) G. H. R. Gibson to be Maj.

Hygiene Companies: F. W. Bury to be Lt.

ROYAL AIR FORCE.

Flight Lts. E. Thompson and N. I. Smith are granted permanent commissions in the rank stated.

The undermentioned are granted short service commissions in the rank of Flying Officer for three years on the Active List: J. Kemp, B. B. Kennedy, J. J. MacAndrews, R. F. MacLatchy, J. B. Murphy, J. C. Neely, F. A. O'Connor, M. O'Connor, and J. J. Quinlan.

DEATHS IN THE SERVICES.

Colonel Robert Hall Forman, A.M.S., retired, who died in London on Feb. 16th, was born in 1854 and qualified with the L.R.C.P. Edin., and L.R.F.P.S. G. in 1877. In the following year he graduated in medicine and surgery at the University of Glasgow, having previously obtained a commission as surgeon in the Turkish Army with which he served in the Russo-Turkish War. He joined the A.M.S. in 1880 and was employed both at home and in India. After 31 years' service he retired, under the age clause, in 1911, but was recalled for duty during the late war, when he was inspecting officer on the staff of General Sir C. Francis Lloyd. Colonel Forman was a popular personality and a keen Freemason, and in his younger days was a powerful Rugby forward and captain of his University XV.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CCLXIV.

THE TREATMENT OF INFANTILE CEREBRAL PARALYSES.

THE treatment of infantile spastic palsies is frequently approached with an attitude of extreme pessimism which is probably unmerited. This is largely due to the existence of a considerable number of cases in which the prognosis is hopeless, and for which no effective treatment is possible. Nevertheless a large number also exist in whom there is a possibility of obtaining an extremely good result, provided that an appropriate line of treatment is adopted at an early age. It is therefore most important that the factors upon which the prognosis depends shall be clearly recognised.

The Outlook of Treatment.

Certain features may be indicated which place the case beyond the reach of effective treatment.

(1) *Evidence that the disease is progressive.*—A small minority of them are manifestations of some condition such as amaurotic family idiocy, or combined degeneration of cortico-spinal and other tracts.

(2) *Presence of a profound degree of mental defect.*—Caution must be observed in making this diagnosis. It must be remembered that mental *retardation* alone is often present in these children, and that under favourable conditions considerable progress may be made in later years. The diagnosis of mental defect in the first three years of life is extremely difficult and uncertain, when the picture is complicated by a coexisting motor disability. This significance should never be attributed to inability to talk; for practical purposes the symptom which renders them unsuitable for treatment is apathy, lack of desire to make movements or handle objects.

(3) *Persistent occurrence of fits.*—A history of occasional fits in infancy is often obtained in children who have made excellent progress. But in those who suffer from repeated convulsions persisting through the second year, the development of some degree of dementia is the rule; it is commonly associated with an attitude of negativism which presents an equally insuperable barrier to treatment.

Two other types of case may be recognised, in which the prognosis is decidedly unfavourable, though an attempt at treatment should be made, as some improvement is possible: (1) in which choreiform or athetoid movements are present; (2) in which a high degree of generalised muscular rigidity is present, sufficient to render active movement impossible. In this type nothing can be accomplished unless the spasm can be reduced by surgical means. This condition is not often found in cases which have received early treatment.

Excluding the patients who exhibit these symptoms, there remains a large number—the majority, I believe, of those who survive the first year of life—in whom the prognosis is by no means so gloomy, and whose future depends to a very great extent on the treatment and management which they receive. It is of the greatest importance that this shall be started during the first two years; when this is done, one may confidently expect that almost all of them will be able to walk and make good use of their hands, while a large proportion of them will attain a degree of improvement which hardly falls short of complete recovery of function.

Prophylaxis.

To cases of primary neuronic degeneration this does not apply, but the question may arise as to whether spastic paralysis may be averted in an infant whose condition at birth suggests intracranial hæmorrhage. A measure which inevitably suggests itself is lumbar

puncture; opinion is divided on its merits and demerits. It has been advocated from various motives; to confirm the diagnosis, to relieve the intracranial pressure, and to miminise the effects of the hæmorrhage on the cortex and subcortical areas. In practice it usually leads to disappointment in all of these expectations. Moreover, the disturbance occasioned by the operation involves an element of danger to the infant. The safest prophylactic routine in such cases is to keep the infant at complete rest, avoiding all manipulation, and feeding from a medicine dropper to obviate the effort of sucking.

General Considerations of Treatment.

The fact must be borne in mind that the defect is in the brain and not in the limb, and that treatment must be directed primarily towards the former. No form of passive treatment appears to be effective in preventing the onset of spasm and contracture, whereas some forms certainly aggravate it. Active movements performed by the child—whether purely reflex or to some extent "volitional" is immaterial—are the only agents which seem to produce a really lasting effect on the tone and functional activity of the affected limbs. The exact process by which this improvement is brought about is not clear. It is impossible to expect development of function in the neurones which have been injured, or have degenerated. The possibility that new synaptic connexions may be formed, that other neurones may acquire the functions which the (as yet undeveloped) pyramidal tracts were intended to subserve, is an entirely hypothetical one, yet it is suggested by the remarkable recovery of function in the child as compared with the adult. The effect exerted by active movement in reducing spasm is probably accounted for by the inhibitory impulses (to antagonistic muscles) which are an essential component of the innervation of voluntary and reflex movement. Relative integrity of the cortical areas may be necessary for this improvement; in imbecile children active movement has been found to aggravate spasm.

Cerebral palsies are not always recognised at birth. It is common for cases of diplegia to be brought for advice in the second year, owing to the parent's disappointment at their inability to stand. The cortico-spinal tracts play so small a part in the infant's activity that there is little obvious abnormality in the earlier months. Hemiplegic cases tend to attract attention somewhat earlier, as the asymmetry is noticed by the parents. If at this stage of development, while behaviour is still to some extent controlled by infra-cortical centres, the child can be assisted to make habitual use of the affected muscles, contracture does not usually develop, and the results of the treatment are often remarkably satisfactory.

Measures directed to the limb.—The use of warm baths, or limb baths in older children, is at any rate rational, as some degree of relaxation takes place under the influence of heat. Massage and passive movements are frequently employed; I have never observed any good effect from them, but they are innocuous and may satisfy a parent who is clamouring for "something to be done." Unfortunately the parents' desires are so often fixed on the one form of treatment that is absolutely contra-indicated and definitely harmful—i.e., electrical stimulation. It is most important to warn the parents at the start that this must never be permitted, and to explain to them that the muscles are already contracting too much, and that electricity will only make them contract more. I believe that the existence of so many permanently spastic children, which is responsible for the pessimism with which these cases are so often regarded, is due very largely to the widespread prevalence of this practice.

Methods of Initiating and Assisting Active Movement.

(1) *During infancy.*—The number and extent of the motor activities developed by an infant are influenced considerably by its habitual position. While the infant lies on its back, movements are comparatively few and aimless; as soon as it sits up, new and mo complicated ones develop with remarkable rapidit A very constant symptom of cerebral palsy is delay sitting, standing, and other "milestones" of infanc and the acquisition of movements is greatly restrict thereby. The first step in the treatment is to get t child into a sitting posture, and the result of this alo is often very striking. In many cases it can be do by simply propping the child with pillows. In othe more often in the second year, spasm of the erect spinæ and glutei renders it difficult to keep the ba and thighs flexed. The child may then be place in a baby's chair with a sliding bar in front. small pillow on the abdomen receives the pressu of the bar and maintains a position of flexion. In surprisingly short time the muscles of the trunk adju themselves to the new attitude, and the child enabled to practise a number of new activities and w handle objects which he took little interest in while a recumbent position. Similar attempts should made at a later stage to combat the retardation crawling and standing.

In *hemiplegic* infants, as soon as an increase of mot activity has been attained by these means, steps shou be taken to develop the motor paths for the paret limb. There is only one possible way of making a infant use an arm that is stiffer than its fellow, a that is to immobilise the sound one. The norm limb is bandaged to the chest for about half the da and objects of interest are placed within reach of t paretic hand. If this is done in the early months life the maximum result will be obtained, but th procedure is the essential therapeutic measure in t treatment of a residual hemiplegia at any age. T foot should be relieved of the weight of clothe Occasionally a light splint is required at night, but it usually best to avoid these during the first two yea

(2) *During later years.*—The immediate object is get the child walking and to avoid any measures whi will necessitate remaining in bed. At the stage wh the child is just unable to stand alone, a most usef apparatus consists of a wheeled frame with crut supports which are adjusted to the axilla. After a fe weeks of practise in the frame, the child is often ab to support the weight of the body, but still fin difficulty in maintaining its balance. At this sta he can usually obtain sufficient support from t handle of a doll's perambulator in the front end which some weights are placed. The first attemp at walking alone should be made on grass, so that t sufferer may not be deterred by painful tumbles. horse-tricycle may also be of assistance in re-educati a paraplegic child, particularly if adductor spasm present.

For *hemiplegic* children the immobilisation of t sound arm should be persisted in for part of the da as long as there is a tendency to use that arm alon At other times exercises should be devised and to provided which encourage the use of symmetric bilateral movements. The best of these is furnish by a wheel-barrow, fully loaded, which the child encouraged to make use of without spilling the content

The range of passive movements must always kept under observation. If this is restricted actual contracture of any muscle-group, no goo result can be obtained by attempts at active mov ment, and the assistance of the surgeon is require One particular movement—supination—is especiall difficult to establish, and often becomes restricted in hemiplegic child in whom all other movements ha been successfully developed. If the pronator spas is dealt with by some measure such as Stoffel operation, attempts at active movement may resumed within a few days.

The limited experience which I have had of t results of sympathetic ramisectomy have not led m to regard it as a justifiable measure.

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Special Articles.

MEDICINE AND THE LAW.

Charge of Negligence against Mental Hospital.

Lieut.-Commander G. H. Drummond, V.C., R.N.V.R., has recovered £500 damages in an action for negligence and breach of contract against the Wonford House Hospital, Exeter. Mrs. Drummond, his wife, has also been awarded £120 damages. The plaintiffs alleged that Mrs. Drummond in April, 1926, after the birth of her third child, became extremely ill. Dr. Grant Wilson, of Sidmouth, finding her to have delusions of persecution and all the symptoms of acute puerperal melancholia, telephoned to the Wonford House Hospital at Exeter (an institution with accommodation for some 140 patients) and gave Dr. W. B. Morton, the doctor then in charge of the hospital, who has since died, information about Mrs. Drummond's condition. Dr. Wilson suggested to Dr. Morton that she should enter the hospital as a voluntary patient but, if this was not regarded as safe, he undertook to go over from Sidmouth to Exeter and certify her. During Mrs. Drummond's first night in the hospital and during the following day she was watched constantly. But on the second night, at 4 A.M., when no nurse was present, she broke the glass of a window and forced herself through an aperture less than 10 inches square. She fell and struck an iron balustrade, breaking her arm and her jaw in two places. These injuries, said the plaintiffs, were the result of her having been left unattended. A nurse or attendant should have heard the smashing of the glass and would have been in time to prevent the patient from completing the feat of working her way through the aperture. Owing to the fact that Dr. Morton was no longer available as a witness there was naturally some doubt as to exactly what information the hospital had received regarding Mrs. Drummond before her admission. For the defendants it was urged that there was no evidence of Dr. Morton being aware that she had shown such grave symptoms; no one would have dreamt that a patient, whether suicidal or not, could crawl through such a tiny opening. Dr. J. G. P. Phillips, physician-superintendent of the Bethlem Royal Hospital (called by the defendants) thought it quite reasonable to have removed the nurse from Mrs. Drummond's room on the second night if—as was stated—the patient had complained that the nurse's presence prevented her sleeping. He considered it quite proper to have admitted her as a voluntary patient, and he pointed out that symptoms of depression and insomnia are often encountered without being readily diagnosed as melancholic. The plaintiffs replied that Mrs. Drummond could not have been admitted to hospital for mere sleeplessness, nor was she placed in a room suitable for a suicidal patient if left unattended. The jury, in awarding damages as already stated, also awarded the hospital £22 10*s.* on a counter-claim for fees. These fees the plaintiffs had refused to pay as being unearned in the circumstances.

The case illustrates the familiar fact that, though the telephone is properly used in an urgent case—as here, for instance, in arranging the prompt admission of a patient to hospital—it may prove an uncertain substitute for a detailed written report if such a record is for any purpose afterwards required.

Unsound Meat Exposed for Sale.

Vigilance in the inspection of meat unfit for human food continues to result in smart penalties. A fine of £50 (with an order to pay a further £50 towards the costs of the prosecution) was imposed lately at the Central Criminal Court upon a Hampshire farmer and cattle-dealer in respect of beef sent to London last November. The meat (two sides of beef from one cow) was sent to a firm which sells on commission. The firm's practice was to have all such meat inspected before exposing it for sale. The inspector found the meat tuberculous; he seized it and obtained the order of a justice of the peace for its destruction. The defendant farmer denied all knowledge of there being anything wrong with the meat, but the Common Serjeant pointed out that knowledge or ignorance was immaterial if the meat deposited for sale was in fact unfit for human food. The defendant also took the point that the beef was not deposited for sale but merely deposited for inspection; he said this meat was never exposed for sale. If such a defence were to provide a loophole the law would certainly require alteration. Evidently, however, the jury, in finding the farmer guilty, were satisfied that the meat had in fact been deposited for sale.

A Legal View of Motoring Offences.

Members of the medical profession from time to time succumb to the accident of a conviction for some motoring offence. They may be interested in a recent case in which the High Court decided that such convictions are not to be taken too seriously. A commercial traveller was employed by a firm of perambulator and toy manufacturers in Yorkshire on a seven months' agreement at certain terms in respect of commission and renewal. A month after the contract was made, the commercial traveller became involved in a collision at night and the Sussex magistrates came to the conclusion that he had been driving on the wrong side of the road. They convicted him of driving to the common danger, fined him £10, endorsed his licence, and suspended it for three months. His employers regarded this as misconduct entitling them to terminate his contract of employment. They further said that before the contract was made he had been convicted of being drunk when in charge of a motor-car, had been fined, had had his licence suspended, and had been sentenced to a month's imprisonment in the second division for driving in a manner dangerous to the public. They also relied upon yet another conviction when he had been fined £3 for exceeding the speed limit. These convictions, they said, were material facts which the commercial traveller ought to have disclosed when applying for employment; the concealment, they argued, entitled them to put an end to the contract. Mr. Justice Finlay held that the non-disclosure did not justify the employers in repudiating the contract. In contracts of insurance there is an obligation to disclose all material facts, but this contract was not of that nature. The commercial traveller's convictions for motoring offences were not a ground for terminating the contract; if he had to use a motor-car in the course of his employment he could get someone else to drive it. The leading case on the subject is Fletcher *v.* Knell, wherein it was decided (in 1873) that there was no right to dismiss a governess merely because she had not disclosed the fact that she was a divorcee. The commercial traveller's convictions had not put it out of his power to perform his duties upon his employer's business. The court, however, made it perfectly clear that if it were of the essence of a contract of employment that the employee had to drive a motor-car, motoring convictions might be material matters which must be disclosed. Thus, if a man applies for a post as a doctor's chauffeur, he must not conceal the facts and consequences of his infringements of the motoring laws.

Action by Mrs. De Freville.

The proceedings taken by Mrs. De Freville last year against Dr. Dill for negligence in his examination of her are recalled by a further action which she lately brought at Gloucester Assizes against her father-in-law, the Rev. F. P. De Freville, of Oakridge Vicarage, near Stroud. It will be remembered that, after something of a scene at the vicarage, Dr. Dill, the family doctor, was summoned and signed the certificate upon which Mrs. De Freville was sent to an asylum. Two days later she was discharged, being adjudged sane, and she was subsequently awarded £50 damages by a jury against Dr. Dill. She complained that she

was forcibly detained at the vicarage for five hours while the arrival of Dr. Dill was awaited and that, when she sought to leave the house, the vicar stood with his back to the door. Her recent action against the vicar thus took the form of a claim for damages for what the law calls false imprisonment. It was stated on her behalf that she was treated as a pauper patient at the asylum and had been subjected to an ignominious experience. Giving evidence herself, Mrs. De Freville denied that, on the occasion when Dr. Dill was sent for, she was abnormally excited or that she raved or threatened to kill anyone. The defendant described what had occurred. He had himself been struck in the eye by the plaintiff who referred to him in blasphemous language; there was no imprisonment; there was never anything to prevent her walking into the garden; Dr. Dill had been called in because she was in such a violent state. She broke a window, said the vicar, and knocked his daughter's spectacles off. He had been unaware that she was to be certified as a pauper lunatic. While another member of the family was giving further evidence in corroboration of that of the vicar the jury stopped the case. They returned a verdict for the defendant and Mrs. De Freville was ordered to pay costs on all her claims.

Clergyman's Mail Order Business in Noxious Drugs.

The remarkable facts proved at the trial and conviction of the Rev. Francis Bacon at the Central Criminal Court speak for themselves. They may open the eyes of the public to the traffic in abortifacients conducted by means of newspaper advertisements and to the abuse of the prefix "Doctor." Bacon was charged with conspiring with one Annie Bolton, a clerk, and with other persons unknown to solicit and incite women who might deal with them to administer to themselves noxious things and to use instruments and other means with intent to procure miscarriage; also, with conspiring to supply noxious things to women knowing they were to be used for a similar purpose. There were further counts in the indictment charging actual supply of noxious things in specific instances. The case opened by the prosecution was that, though there might be no drug which could be described as a certain abortifacient, there were several drugs which, if taken in too large quantities or too frequently, were likely to cause miscarriage. It was contended that the drugs advertised by Bacon as "Dr. Hannah Brown's treatment" were of this nature—"noxious" because likely to be injurious to a pregnant woman in that they might produce miscarriage. It was further contended that the defendants (as documents used in the course of their business indicated) were aware of the nature of the drugs. Lastly, although it was not suggested that in every case the drugs were supplied to a pregnant woman, it was suggested that the defendants sent the drugs to any woman who would pay for them and that their correspondence showed that in many instances they knew that the women were in a condition of pregnancy. The defence was that, if the drugs were so sent to expectant mothers, it was contrary to instructions. Annie Bolton, who had evidently played a subordinate part in the conspiracy, admitted in cross-examination that the directions to recipients that the drugs were not to be used in cases of pregnancy were mere pretence. After her evidence her counsel withdrew her plea of "Not guilty." She pleaded "guilty" and was eventually sentenced to six months' imprisonment in the second division. Bacon maintained his innocence in the witness-box by what the Recorder afterwards described as perjury. It appeared that he had used the names of Dr. Howard Baron, Dr. Mary Lane, and Dr. Hannah Brown. There was a suggestion that Hannah Brown held a doctorate of philosophy. It was also stated for the defendant that he had been given the degrees of LL.D. and D.D. during visits to Canada. This grant, which was not further explained, was apparently his excuse for describing himself as a doctor when selling drugs to women who might well be unaware of the nice distinctions in university faculties. He justified this procedure as being consistent with commercial morality—a claim which, coming from a minister of the Church of England was described by the Recorder as despicable, deplorable, and contemptible. "To make money," said Sir Ernest Wild, "you have preyed upon the agony of poor expectant mothers and jeopardised their health. Taking into account a statement of the value of the defendant's religious work in the East End, the Recorder passed a sentence of 15 months' imprisonment in the second division, hoping that the case would be a warning to all persons concerned in this pernicious traffic.

Apparently the advertisements had been so worded as not to arouse the suspicions of the newspapers which published them. Sir Travers Humphreys, in opening the case, observed that the "Dr. Hannah Brown Treatment No. 1" cost 9¼*d.*; there was 1s. for the Government stamp on it, and it was sold for 5*s.* The "No. 2 Treatment" cost 1*s.* 7½*d.* and was sold for £2 2*s.* When the summons was served upon him Bacon said the drugs were merely strong aperients and were obtained from a reputable firm.

SCOTLAND.

(FROM OUR OWN CORRESPONDENT.)

Legislation against Venereal Disease.

THE Edinburgh Corporation have now prepared a Bill providing for the compulsory treatment of venereal disease, and it seems likely that this Bill will go forward to a second reading and be considered in due course by a Select Committee of the House of Commons. The policy it embodies is explained in an official statement which points out that schemes against venereal disease are not yielding results commensurate with the expenditure; that the purely voluntary system, which has received an adequate and indeed an exhaustive trial, has proved ineffective, and that it is urgently necessary to test a system of compulsory treatment. All that is now asked is permission to try the new policy for an experimental period of five years, but the corporation are satisfied that its disadvantages will be trifling compared with those of the present system, under which the total number of persons not completing treatment in five years was 5129, making a yearly average of 1026. Of these defaulters, it is stated, at least 524 were suffering from contagious disease, while the remainder must be regarded as potential sources of infective disease besides being in a condition dangerous to themselves. "That there should be in each year an average of over 1000 cases of possible infective disease which are known to the public health authority, and that the public health authority should be powerless to deal with these cases is far from satisfactory when viewed from the public health aspect from preventable disease. As a result of so many cases of venereal disease failing to complete their cure, the local authority is expending very considerable sums of money without adequate return."

Although the proposals for compulsory treatment are put forward only by Edinburgh, other large local authorities in Scotland have indicated general sympathy with the Bill. On this subject there is a decided cleavage between opinion in Scotland and opinion in England, as has been obvious for two or three years. For some years the attitude of the local authorities has been hardening towards more stringent control, and it appears that Glasgow and the larger authorities in the neighbourhood are pushing forward a project for much more extended powers. In Edinburgh opinion is very much divided among the women's associations, and some of these have been in conference with the Bill's promoters. The corporation are anxious to carry all sections of public opinion along with them and, in the documents circulated, they make a reasoned reply to objectors. They claim to be acting in the spirit of the Trevethin Report, particularly in asking powers only for an experimental period of five years. In essence the Bill is no great advance on the provisions of the Public Health (Scotland Act, 1897, which, at least in words, contain

ıll provision both for entry, examination, and treatıent. A somewhat new point is the stress put upon compulsory treatment." From the nature of the rovision for carrying these powers into effect, it ›oks as if the "treatment" is to be regarded simply s a method of prevention, and not to be taken merely y itself. The general principle of the Public Health cts is, of course, that every infected person should ake proper precaution against spreading infection; ut it may be argued that "treatment" and isolaon are alternative or complementary methods of revention.

If the Bill goes to a second reading, and is referred) a Select Committee, there ought to be a first-class ebate on all these issues. Undoubtedly the atmoohere has changed considerably since the Royal ommission reported, and all great local authorities ave had thousands of cases through their hands and ow understand better the limitations of the venereal isease regulations. Nearly every aspect of the ıbject, both medical and social, has been discussed gain and again in print and in conference, and the me seems appropriate for a full-dress debate in the ouse of Commons. Meanwhile it should be said ıat the Edinburgh clinic has, from the beginning, een one of the most successful in the kingdom.

A Fee-paying Glasgow Hospital.

The governors of Victoria Infirmary, Glasgow, ropose to admit patients on payment of an inclusive e of £6 6*s.* per week, subject after a few weeks to duction to mere maintenance charges. This would e sufficient to cover the cost of establishment charges ıd nursing, together with a modified fee to the ırgeons who perform the operations. For these ırposes a separate annexe will be built, with access the present operating theatres. None of the present ard accommodation will be used for pay patients. ne chairman has indicated that there is no intention interfering with the function of the private nursing mes and that means will be taken to restrict the ork to those who feel the "private home" fees to be financial burden. The experiment is a sign of the mes and its development will be watched with terest. A somewhat similar extension by the asgow Royal Infirmary is in progress, but I underand that this is restricted to provision for maternity ıd gynæcological work.

Steel Houses.

A little time ago Lord Weir offered to Glasgow rporation the stock and certain accessories at the ırdonald Factory on condition that the corporation ould erect 5000 steel houses. The corporation has t accepted the offer. The reasons are probably ixed, but it is now the case that a brick house of uivalent accommodation can be built more cheaply an a Weir steel house. It is to be regretted that rd Weir's experiment in auxiliary housing has never tained a broad enough canvass; but the 2000 eady erected by the National Housing Company ll give sufficient information to test the endurance d comfort of such a building medium. Probably ong the many types of experimental materials el will hold its own.

IRELAND.

(FROM OUR OWN CORRESPONDENT.)

Meat Inspection in Cork.

IT is a sign of the new spirit in public health ministration in Ireland that Dr. J. D. Carroll, the cently appointed medical officer of health for Cork, endeavouring to establish a system of meat inspecn in that city. In a recent report to the borough mmissioner he recommends a stringent revise of -laws, by which the sale of meat before inspection uld be prohibited. He points out that at present e only place where meat can be inspected is the tual stall or place of sale. To inspect the stalls or ops would require a greatly increased staff. Moreer the inspection would be faulty, because a carcass should be examined as a whole and not after cutting up. The public health authorities have no power to supervise slaughter-houses outside the city boundary, nor to insist on notice being given of the time of slaughtering in the slaughter-houses within the city. Dr. Carroll's suggestion is that all meat intended for sale in the city should be brought to a central depôt for inspection.

Deputation to the Minister for Local Government and Public Health.

The Minister for Local Government and Public Health, Mr. Richard Mulcahy, accompanied by Dr. E. F. Stephenson, chief medical officer, and other officials, recently received a deputation representing the Irish Medical Committee. In the first place the deputation pointed out the inadequacy of the salaries paid to dispensary medical officers particularly in the counties of Mayo and Longford, and asked the Minister to regulate the salaries in these counties on the basis of the scales paid in other counties. He promised to explore the situation fully to ascertain the best way of dealing with the problem, but was unwilling at present to fix the salaries by sealed orders. Attention was drawn by the deputation to the transfer of medical officers by local authorities, and it was urged that transfer should be treated as promotion, not as an exercise of patronage. Seniority, meritorious service, and post-graduate experience should be the determining factors. Attention was also drawn to difficulties not infrequently placed in the way of medical officers applying for leave, and in reply the policy of the department to afford all reasonable facilities was explained. Questions relating to county hospitals were discussed; it was submitted that the salaries of county hospital surgeons were inadequate, and scales from £800 to £1200 a year were suggested. The Minister promised that individual cases would be considered as they arose. The deputation were opposed to any system of payment which would render it part of the duty of the surgeon to give treatment to paying patients. They expressed approval of the terms of the draft regulations dealing with the admission of paying patients to hospitals, and asked that they should be applied to all county hospitals. It was stated that at present many persons who were able to pay full costs of maintenance, treatment, and medical attendance were being treated free in the county hospitals. The Minister promised to inquire into this matter. He further stated that the delay in appointing medical officers of health in certain counties was not being overlooked, and that the matter would be pressed forward. He expressed his sympathy with the request put forward that the Government should consider the provision of funds for medical research.

Certification of Insured Persons.

The proposal of the National Health Insurance Commissioners to alter the present method of distributing the funds available for payment for the certification of insured persons is causing much adverse comment in the profession. At present the funds are distributed into pools for each dispensary district according to the number of insured living in the district. The Commissioners propose to substitute a county pool for a dispensary district pool. The case is made that the small pooling area requires complicated and troublesome book-keeping, which adds materially to the cost of administration, and that there are the widest discrepancies between the rate of payment per certificate in different but similar areas. In reply, it is pointed out that the larger the pool area the more difficult it is to place any check on careless certifying. With a dispensary area pool in country areas most of the certifying in each area is done by the dispensary medical officer, who is, therefore, under no temptation to issue certificates laxly, but with a county pool he is tempted to be less careful. It is unlikely that the change proposed by the Commissioners will bring about any improvement in the efficacy of certification, though it will cause a trivial saving in administrative expense.

Correspondence.

"Audi alteram partem."

"INCIDENCE OF THE MINOR PSYCHOSES."

To the Editor of THE LANCET.

SIR,—It is to be hoped that Dr. Millais Culpin's valuable paper on this subject in your issue of Feb. 4th will not speedily pass into limbo. That nearly 50 per cent. of the working population as tested by his samples should suffer from psychoneurotic symptoms, that in a group, where special care had been taken to exclude the temperamentally unfit 18 per cent. should have these symptoms fairly marked, must provide material for thought. And it is to be noted that this was a *working* population, not one which needed to be told to "pull itself together and get on with it." These people were already doing so; clearly many of them thought that their condition was one of health, and were unaware that relief was possible for them.

There are many points of interest in the paper but I should like to call attention to one or two. First, there is clearly shown a distinction between psychoneurotic illness and psychoneurotic symptoms. In the laundry which Dr. Culpin investigated illness was rare, but people with symptoms were numerous. Illness was not common because care was taken of these workers. Those who were present at the meeting where the paper was read cannot have failed to be impressed by the enthusiasm of the employer at this particular workshop; one felt that everything that interest in the welfare of the people could do was being attended to; one felt that here occupational therapy was being carried on at its best, and that the results were as good as could possibly be obtained from such a method. But probably with a simple psychotherapy many of these patients could have been made well—i.e., comfortable instead of uncomfortable. A second point which Dr. Culpin emphasises and which requires much taking to heart is that it is easy to change "neurasthenia" into "anæmia" and "indigestion" if the real condition is merely frowned on and not treated. Those who had the privilege of studying the war cases will remember the odd synonyms which obtained a footing in those times, myalgia, D.A.H., &c.

On several grounds, however, I cannot agree with Dr. Culpin that we should term these conditions "minor psychoses." Whatever be the origin of the word psychosis it has come to mean insanity in the minds of almost everybody; patients want to know what the word means, and we cannot in truth tell them anything else. I should not care to say to them that they were suffering from minor madness. It will be said that insanity is a legal term, but if it were it should be capable of definition. It is not fair to saddle the lawyers with this responsibility. The idea of insanity is one in general use. We ourselves act on it continually; it is usually on our initiative that patients are placed in the legal status of being insane. The condition is hard to define but on the whole we know when we are dealing with it, just as it is difficult to make a distinction in words between an animal and a vegetable, but the two conceptions present no practical difficulty in their differentiation. Neither do I like the word "minor," for though these particular people were not very ill, their condition may if neglected give rise to as much suffering as any disease we know of. This minor malady may easily be a graver disease than a mild manic-depressive psychosis, which, however, is always classified as a major psychosis. If some such expression is to be used, surely the adjective should be "benign." A fibroid of the uterus may be a graver disease than an epithelioma of the lip; we therefore do not speak of the non-malignant tumours as minor, but as benign.

To my mind these psychoneurotic patients are much more allied to normal people than they are to psychotic patients. What Dr. Culpin was studying was the incidence of emotional reactions, which after all a present to some extent in nearly everybody. It a question of degree, of the amount of discomfo which they cause whether we shall say that t patient has an illness or not Dr. Johnson touch posts, and was therefore a subject of the obsessiv compulsive neurosis; there are few whose freedo from acrophobia would enable them to stand on t top of a factory chimney. Fear of the dark childhood was inquired about; surely it is universa but I may here be doing Dr. Culpin an injustic He may have used this question only to lead up the further one, is it present now? Even so, it quite common in people who are not even benign psychotic. It is when these normal reactions becon excessive that we call them illness. When they a so frequent that absence from work becomes imperati we have certainly passed into that state. Wh less frequent they may constitute a danger. There a point short of their putting an end to work alt gether where they clearly indicate that the individu is not adapting himself to his environment, where som thing should be done; but it is not likely that they a quite absent in anyone, though it might take caref investigation in many to establish their presence.

It may be thought that if there is truth in the remarks, then there is an end to the value of D Culpin's research. This is not so. In a very sho examination Dr. Culpin elicited these symptoms wi great ease. It would have taken much longer observ tion to have done this had he not been getting ne danger-points. Now the psychotic is in a differe state. However severe a psychoneurosis, the patie can be reasoned with on the lines on which we ordinarily reason. He will respond and argue, an fortunately, he will sometimes even agree with us accordance with the logic we all use. However mi a psychosis this cannot be done so far as the psycho is concerned. The psychoneurotic is sure of nothi and his reasoning can be upset; the psychotic always sure of certain things, and where he is su he cannot be upset.

It is not quite fair perhaps to revert to wh happened at the debate when the paper was discusse for nothing of it occurs in Dr. Culpin's publish paper; but I shall venture to rely on his generosi and do so. Dr. Culpin said on that occasion that could not see why a man who had an irrational bel that he was being persecuted was said to be sufferi from a psychosis, while one who had an irratio fear which prevented him crossing an open field w said to be suffering from a psychoneurosis. T difference is a matter of clinical experience. The fi man will almost certainly maintain against cle proof that he is right, and nothing will shake hi *Our* logic will avail nothing. If the whole world hol otherwise the whole world will be wrong. The oth man will in the first place agree with us that his fe is irrational; secondly, if it can be shown that h fear really represents something else—and t demonstration will be within logic—he will like accept this idea, and by such logical steps, when has been shown what it was all about, he will in ma instances lose his fear altogether.

I am, Sir, yours faithfully,

T. A. ROSS.

Cassel Hospital for Functional Nervous Disorders, Penshurst, Kent, Feb. 13th, 1928.

THE PRESENT POSITION OF THE VOLUNTARY HOSPITALS.

To the Editor of THE LANCET.

SIR,—Being a firm believer in the voluntary hospital system I have followed with interest t recent correspondence in your journal under th heading; it has been instructive and, I think, h come opportunely. I wish, however, to point o that the coöperation advocated by Dr. Graha Little and Mr. Spencer is not the only change need in our voluntary system as at present carried ou It has other serious defects that require to be remedi

ithout delay if it is to emerge successfully from the erious crisis through which it is now passing. I say serious" advisedly, because it has to be recognised hat nationalisation of our hospitals has the support ot only of some of our profession and of many of the eneral public, but also, it would appear, of the abour Party, whose creed is that all hospitals should e under State control. It is in this fact that the hief danger to the voluntary hospital system lies; feel that this is not being sufficiently realised, and e should grasp the facts which are relied on for stifying the changes advocated.

On one occasion, when I had to defend the voluntary ospital system on a public platform, my opponent eing one of our own profession, I had clearly put efore me the arguments on which the advocates of ationalisation rely. Put briefly, the position taken p was that the voluntary hospital system has the ree following main defects: (1) It cannot supply ne money necessary to meet the expenses of the pkeep of the civilian hospitals; (2) the hospital ccommodation furnished is not sufficient for the equirements of the community; (3) coöperation etween the different classes of hospitals and the oluntary hospitals themselves is absent. It cannot e denied that our voluntary hospital system as at resent carried on has these three defects, and had admitted so much, at the same time pointing ut that the defects could be remedied without aving recourse to nationalisation. I do not propose, this communication, to put forward the changes our hospital system that I would advocate in onnexion with them, but I wish to point out that ne supporters of nationalisation of our hospitals ave grounds for asserting that the defects above entioned exist, and that they may be justly regarded s serious drawbacks to the voluntary system. This, think, the supporters of the voluntary system have ot fully realised.

Taking first the monetary question, great reliance placed on the view that "the voluntary system is owing in strength year by year" (see the Cave eport), and that appeals are always generously sponded to. No doubt this is so, but the fact mains that our newspaper columns contain such aily appeals for help, and the returns in Burdett's Hospitals and Charities" indicate that the financial osition of the voluntary system is far from satis- ctory. The workmen's contributions form a very gnificant departure and is one that will make itself rofoundly felt, for, under it, our civilian hospitals ill be largely maintained by the working classes, and ot so much so by the rich. This is as it should be nd is welcomed by many as a very praiseworthy ature (which undoubtedly it is), but a little con- deration will show that it must be safeguarded, herwise it will be used as an argument against the oluntary system, and it will be quoted as showing at it is the money of the working classes that has ven stability to the financial side of the voluntary ospitals. A Labour Party in power would use the ct as a strong argument in favour of the nationalisa- on of our hospitals. Representation on the boards management have been granted in respect of these ntributions, and they, I think, cannot be justified, r these moneys are not subscriptions to the hospitals they are deducted from the workmen's pay, being some cases supplemented by the employers. They ould rather be placed under contributions for aintenance, seeing that value is more than received r them in the shape of the medical and surgical ill that they ensure. In my opinion, these sub- riptions do not qualify for representation on the oards of management, any more than daily travelling a certain railway entitles passengers to the right being qualified as shareholders.

Coming now to the complaint that the voluntary ospitals do not furnish sufficient accommodation r the needs of the community, there is no doubt at this deficiency acts to the detriment of the oluntary system. It has been used as an argument r increased public support, in view of the great amount of work that the voluntary hospitals are called upon to do, but it is equally certain that it can be detrimental, for the long waiting-lists that are the outcome of it are relied on as proof of the want of beds. The fact is that the deficiency arises from not laying down definitely the class of patients that are to be admitted, thus keeping an open door through which, naturally, everyone seeks entrance. There is no doubt that the voluntary hospitals should confine themselves to the wants of the artisan class, leaving the really necessitous poor to the poor-law hospitals, the needs of the middle class of society (which are very clamant) being met either by paying-beds in the hospitals, or, preferably, by inexpensive nursing homes, where, for a moderate inclusive charge, they can obtain reliable "medical lodgings" and be sure of a healthy environment, of good nursing, of proper food, the use of a proper operating theatre, if needed, and of skilled medical and surgical attendance—unless they should prefer to have the services of their own medical attendant or of some special surgeon, for whom, of course, they would have to pay themselves.

Lastly, coöperation between the various classes of hospitals is clearly needed. On this point I need hardly dwell, as Dr. Little and Mr. Spencer have fully pointed out the needs and advantages of it. I must, however, disassociate myself from Dr. Little's disparaging remarks on poor-law hospitals and their work. Speaking from my knowledge of the Scottish poor-law hospitals, they are not justified, and they cast an unmerited reflection on a body of medical men and on institutions that have done and are doing excellent work. It must not be lost sight of that from the earliest days our voluntary system has had close relations with the poor-law hospitals, as our word "infirmary" indicates. Dr. Little is not correct in saying that the voluntary hospitals have had an existence of 800 years; they are of much more modern origin and really date from the eighteenth century. The old hospitals like St. Bartholomew's and St. Thomas's, to which no doubt Dr. Little refers, were not originally voluntary hospitals; they were chartered and endowed hospitals, and made charges for treatment. Our voluntary hospitals as they exist to-day, owe their origin, no doubt, to the inefficiency of the medical services given at that time in the poor-law hospitals, but the latter have felt the good influence of the voluntary hospitals and are vastly improved—so much so is this the case that the voluntary hospitals are afraid that they may become serious rivals to them.

In conclusion, my object in writing has been to emphasise my view that the chief peril that threatens the voluntary system is political—it is a political party that desires to capture the hospitals and put them under State control. I consider that indirectly we are helping in this matter, for our present voluntary hospital régime has vulnerable points in its armour. These should be remedied without delay. The voluntary hospital system is by no means dead, but it contains elements of disintegration that need attention, for like everything else that is vital, unless properly tended and nourished, it will decay. Union and solidarity are urgently called for in connexion with it, for at present it resembles the bundle of sticks, each of which can be broken individually but not collectively. If we ourselves do not put our house in order, the Government will do so. The Government recognises that provision of proper institutional treatment in sickness must be provided for all classes of the community, because Ruskin's dictum that "the prosperity of a country depends on the number of people it can employ" is as true to-day as when spoken, and we know the number of working days and weeks that are lost through illness. There would, I think, be universal regret if our voluntary hospital system should disappear. As a nation, we are proud of it and of the splendid record of work that it has accomplished, besides, also, its being a working manifestation of that quiet, peaceful stream of brotherly love and sympathy that, year in year out,

flows quietly throughout the community, and that, when action requires it, shows itself in unbounded generosity and kindness.

I am, Sir, yours faithfully,

Glasgow, Feb. 17th, 1928. GEORGE THOS. BEATSON.

To the Editor of THE LANCET.

SIR,—Within the last few days a very authoritative manual upon hospitals, by Captain Stone, has been published. May I, in a final letter, give some of his figures, which I think corroborate certain statements made by me and adversely criticised by poor-law officials. These latter advocates have now retreated from their first position and rest their case upon conditions in London, in which they claim there are no empty beds at the poor-law institutions. Captain Stone says, p. 23: "There are in London 30 institutions with training schools for nurses attached and with available beds exceeding 19,000. The average number occupied is approximately 16,000, leaving about 16 per cent. of beds unoccupied." There would thus appear to be some 3000 empty beds at the poor-law institutions in the London area, a reserve which would more than cover the deficit at London voluntary hospitals, for in 1925 an estimate of waiting-lists was accepted by the King's Fund which showed that a provision of 2088 additional beds at voluntary hospitals in London would meet with a reasonable standard of adequacy the position of their waiting-lists. Since that date 1200 beds have, in fact, been added (in 1926) to voluntary hospitals in London. It is obvious, therefore, that the voluntary hospitals are now dealing with a much larger percentage of the demand than is sometimes represented to be the case.

I am, Sir, yours faithfully,

Feb. 20th, 1928. E. GRAHAM LITTLE.

To the Editor of THE LANCET.

SIR,—In your report of the special meeting of the Charity Organisation Society on Feb. 13th (THE LANCET, Feb. 18th, p. 342), to discuss the relationship of the voluntary hospitals and the public authorities, I am represented as having stated that 32 per cent. of the required revenue of the London voluntary hospitals was paid by public authorities. What I said was, that the total amount received from patients' payments, public authorities, &c., on account of services rendered was 32 per cent. Of this, 23 per cent. came from patients and their societies, and 8 per cent. from public authorities. These percentages are taken from the statistical report published by King Edward's Hospital Fund for London. It may be interesting to add that the percentage of patients' payments, including contributions from societies, has risen from about 9 per cent. in 1913 to 23 per cent. in 1926. The rapid growth of the Hospital Savings Association is evidenced by the fact that the Association paid to the hospitals in 1927 £127,196 for services rendered, as compared with £17,369 in 1924, the first year of its existence. Speaking on Nov. 28th, 1927, at the annual meeting of the Association, which was attended by a large number of group secretaries from all parts of London, Sir Alan Anderson said: "We are founded on a sure foundation, the affection which the voluntary hospitals have established in the hearts of the public who use them." It will be seen that a steadily increasing effort is now being made by those who use the hospitals to coöperate in providing for their maintenance.

I am, Sir, yours faithfully,

E. A. H. JAY,
Secretary for Propaganda, King Edward's Hospital Fund for London.

7, Walbrook, E.C., Feb. 21st, 1928.

PREVENTION OF DIPHTHERIA.

To the Editor of THE LANCET.

SIR,—The very interesting communications on this subject which have been appearing recently in your columns have tempted me to submit some few cases which in their way are equally interesting. It has been the practice in this hospital since the beginnin of 1927 to immunise the nursing staff against dipl theria and to keep the positive reactors away fro the diphtheria wards until immunity was establishe During 1927 three nurses were warded with diphtheri

The first case was a nurse who was found to be Schic negative on Sept. 28th, 1927, and was therefore allowed t work in the diphtheria wards. On Dec. 9th she reporte with a sore-throat and was found to have a bilater follicular exudate.

The second case occurred in a nurse who was Schic positive on joining the staff and after one course of immunis tion had developed sufficient immunity to give a negativ reaction on April 12th, 1927. For interest sake she wa retested on Nov. 11th and again found negative. O Dec. 7th she reported with a sore-throat and the left tons was found to be completely and the right partially covere by typical diphtheritic membrane.

The last case was a nurse who was Schick-negative o Nov. 11th, 1927 (following active immunisation), an developed a patch of membrane on the left tonsil o Dec. 30th. In this case a specimen of blood was take well within 24 hours of the first complaint of sore-thro and the serum was found to contain 1/100th of a unit antitoxin per c.cm.

These three nurses developed diphtheria whil nursing cases of tracheotomy and were therefo exposed to a heavy infection. All three we admittedly mild cases and none developed paralysi Pure cultures of the Klebs-Löffler bacillus we obtained in every instance. That the toxin used f the Schick test was not at fault is evident from th fact that other nurses who were tested with the sam batches gave positive reactions. One case further worthy of mention—viz., that of a nurse who wa admitted to the London Fever Hospital with fauci diphtheria. There was membrane on both tonsi from which virulent diphtheria bacilli were isolate She had been Schick-tested at her own hospital an found to be negative.

However enthusiastic the claims for the Schic test and active immunisation against diphther may be, this type of case has still to be explaine And, provided that the activity of the toxin undoubted, the following explanations seem bot reasonable and possible. First, there are people wh although susceptible to diphtheria, may yet give negative Schick reaction owing to the insensitivene of their skins. In other words, the Schick reactio in some cases may not be a sufficiently sensitiv indicator of immunity or susceptibility. Secondl the blood antitoxin is not an unchangeable facto so that a small drop in its level will permit of a attack of diphtheria. And in this connexion it seem certain that there are a few people who never acqui a satisfactory immunity. Finally, there may b factors, not so important as blood antitoxin, whic may play some part in determining the immunit of the individual. These suggestions can only appl to those who possess only a borderline immunity.

That the blood antitoxin may not be the onl determining factor is suggested by the fact that a Schick-positive people, although constantly expose to massive doses of infection, do not contract dipl theria; and that a positive reaction with virule diphtheria bacilli in the throat (of which we hav had two cases in the last two years) is compatib with perfect health. Perhaps there is in some, wh have little or no blood antitoxin, an effective loc protection against the Klebs-Löffler bacillus.

This communication is submitted, not to detra from the importance of the Schick test or the result of active immunisation, but to suggest that th problem of diphtheria amongst the staff of a fev hospital is not yet completely over and that furth research is necessary before it becomes the complet success that is claimed for them. I should add tha I am indebted to Dr. C. R. Box for permission t publish these cases, under whose care they we whilst in hospital.

I am, Sir, yours faithfully,

R. MASSINGHAM,
Resident Medical Officer, London Fever Hospital.

Feb. 9th, 1928.

MASTOID OPERATIONS.

To the Editor of THE LANCET.

SIR,—The recent publication in THE LANCET Feb. 11th) of a paper by Mr. Heath on certain ıastoid operations prompts me to make a few ɜmarks.

It is generally agreed "that, in striving honestly urselves, we should heartily acknowledge the triving of our neighbour." Also that we should never ɔrget what is due to those who have gone before. In the light of history the present and the future ıay be interpreted and guessed at." This is no new pinion, for Celsus wrote: "Though we should not ɛfuse to give modern authors due credit for their iscoveries and happy imitations, it is none the less ıst to restore to the ancients what properly belongs ɔ them." To

> "Damn with faint praise . . . .
> And without sneering teach the rest to sneer,"

hardly cricket. But, after all, in some rcumstances—

> "To be dispraised, is no small praise."

Long years ago I met Schwartze and Stacke and was very familiar with the pioneer labours of von roltsch, Jacoby, Küster, Körner, Zaufal, and Eysall. ı the gradual evolution of truth, and at the end of ıch stage of the world's history, it would seem that great man appears, who is the messenger of a new nowledge, the herald of the dawn of a wider insight ıto life and truth. Such a man was Schwartze. ; is to the scientific insight and work of Schwartze ıat we are indebted for the discovery of the operation ɔr acute infection of the mastoid process. This was momentous scientific and surgical triumph. This ɔeration not only saves the life of the patient, but ıves intact the hearing.

When Mr. Heath disparages the operation, describes as altogether too primitive, and speaks of facial ılsy, dislocation of the incus, deafness, unsightly ɜars, painful dressings, inaccessibility of the mastoid ıtrum, prolonged suppuration, wounds that never ɛal, and fatal results, he must be thinking of and ɔnsidering some operation which Schwartze, if alive, ould not recognise as the one which bears his name. The object of the Schwartze operation for acute disease twofold, as is also the object of the Schwartze-aufal, or Schwartze-Stacke operation for persistent ıronic suppuration: (1) The removal of the disease, ıd (2) the conservation and improvement of the ɛaring. These have been the aims of all surgeons ! my acquaintance ever since these beautiful opera-ons have been devised and practised. They are ɔnservative operations. The surgical principles nderlying their performance cannot be varied without sk of failure.—I am, Sir, yours faithfully,

London, N.W., Feb. 20th, 1928. CHARLES BALLANCE.

CARBON DIOXIDE IN ANÆSTHESIA.

To the Editor of THE LANCET.

SIR,—With regard to your leading article last eek on the medical uses of carbon dioxide, may I ffer a few remarks on its employment in the lministration of anæsthetics? My clinical experience ıs not led me to consider it to be of sufficient ıportance to be included in the anæsthetist's equip-ɛnt; it may even prove a cause of anxiety if the ɔparatus is not in perfect order and an overdose ɛ inadvertently given.

It has been stated that the presence of CO_2 in small ıantities is likely to obviate holding the breath and ıus bring about a quicker induction. In adults ɔlding the breath and struggling by the patient ıring induction I find to be of very rare occurrence ɛdeed if the induction is commenced by careful ıd tactful measures. There is no object in making ıe induction so short that the patient is discomforted. he mask in the open method can be held 3 or 4 inches om the face with very little anæsthetic on it, the ıount gradually increased, and the distance from the face gradually decreased, and by the time it is actually on the face most patients are sufficiently asleep without struggling for the anæsthetic to be more quickly pushed and the vomiting centre controlled. Neither have I experienced simple arrested respiration which has not very soon been restored either by waiting a minute or two or by cutting off oxygen if it was in use at the time. Of course, one would not wait a moment if the pulse stopped before taking measures to restore the dormant heart.

Lastly, the advantage claimed for increased respiratory action and amplitude from inhaling CO_2 after an operation, in order to wash the anæsthetic more quickly out of the system, may be open to objection on the grounds that the patient is called upon to use his respiratory muscles in excess while in a state of fatigue instead of waiting till he has gradually gained strength.

Dr. R. M. Waters's observations on the danger of CO_2 in cases of acidosis are very important, more so of course in respect to children than adults.

I am, Sir, yours faithfully,

St. James Court, S.W., Feb. 20th. JOSEPH BIRT.

GASTRO-DUODENAL ULCERATION.

To the Editor of THE LANCET.

SIR,—For the past two years I have been practising this method of treatment on lines very similar to those described by Prof. H. MacLean and his colleagues. I can substantiate the full claims made by them that this is the only real effective method of dealing with the ulcer. In one series of 25 cases (the early ones) 24 became quite well and have kept well, the twenty-fifth was one of marked pyloric stenosis and was put on the alkali as a temporary measure till the operation advised was performed.

The use by the writers of the word "cure" seems have raised a difficulty, but the 24 patients of whom I write are quite definite about it, and as no evidence of ulcer, radiological or otherwise, is found in their case, may one not reasonably assert they are "cured"? The method used was a modification of Sippy's. He was quite clear (*Jour. A.M.A.*, 1915) on the question of cure and even included all cases of pyloric stenosis except those of extreme narrowing due to definite cicatricial contraction following a healed ulcer. That the method does control the hyperacidity can be proved by the Einhorn tube, and it is well to acknowledge, as claimed by MacLean, that it is the *continuous* secretion of HCl which requires controlling before healing takes place. In my cases I never met with an alkalosis.

It may be suggested that the quoted cases are of too recent a date to warrant the assertion of cure, but they may be of interest following the much longer experience of those others. I have the temerity to publish them since I have seen nothing from any other source in this country of this particular method.

I am, Sir, yours faithfully,

A. J. D. CAMERON, M.B., Ch.B.

Northampton, Feb. 15th, 1928.

THE DISPOSAL OF THE DEAD.

To the Editor of THE LANCET.

SIR,—In a leading article under this heading, appearing in your issue of Feb. 11th, reference is made to the fact that 166 out of some 200 municipalities had given categorical responses to request for information about cemetery undertakings, a response which you rightly regard as "an unusual event." May I, in fairness to the various authorities and in acknowledgment of the courtesy shown in responding to the questionaire, be allowed to point out that as a matter of fact every authority applied to responded. One hundred and sixty-six sent as complete and detailed information as they were able (and in the bulk of cases replied to each question on the form). Thirty-one other authorities also replied, but as they did

not control any cemeteries were naturally unable to supply information. We may fairly assume that the information would have been supplied had they been able to give it. The actual position is: 198 authorities were applied to, 197 replied as fully as they were able, and one only declined information. Each of the authorities has been supplied with a copy of the book and it is hoped that this publication will convey useful information in regard to a matter upon which the public might properly be informed. The figures are only carried as far as March, 1926, but it is unlikely that statistics brought down to a later period, or even carried to 1929, and possibly thereafter triennially, would show any marked change.

Cremation is of slow growth, but is making steady progress. It hardly seems necessary, however, that burial should be subsidised by ratepayers when, by the adoption of cremation, such a course would become unnecessary.—I am, Sir, yours faithfully,

Manchester, Feb. 13th, 1928. ARTHUR E. PIGGOTT.

To the Editor of THE LANCET.

SIR,—The Infectious Diseases (Prevention) Act, 1890, Section X., provides the powers that Prof. E. L. Collis suggests the lack of in his letter in your last issue. Acting under this section, I have had no difficulty in obtaining the burial of bodies retained or intended to be retained for more than 48 hours in the house where this was undesirable, not necessarily on account of infectious disease. The section specifically states that the power applies to *any* body.

I am, Sir, yours faithfully,

H. KERR.

Feb. 20th, 1928. M.O.H., Newcastle-upon-Tyne.

AGGLUTINATION OF *MICROCOCCUS MELITENSIS*.

To the Editor of THE LANCET.

SIR,—In your issue of Dec. 17th, 1927 (p. 1290) Dr E. Wordley asks if the agglutination of a patient's serum against *M. melitensis* in a dilution of 1/400 is sufficient "in cases of this type to justify a diagnosis of undulant fever?" Old subcultures of *melitensis* will often agglutinate to this dilution with sera taken from patients who have had pyrexia for a week or more, for *melitensis* is particularly susceptible to agglutination by the serum of patients who are suffering from chronic streptococcal infections. I recall one case of endocarditis due to *Strept. viridans* in which the serum agglutinated *melitensis* up to a dilution of 1/1000.

I am, Sir, yours faithfully,

LUCIUS NICHOLLS.

Bacteriological Institute, Colombo, Ceylon, Jan. 14th, 1928.

Public Health Services.

ULTRA-VIOLET TREATMENT AT PUBLIC BATHS.

THE Baths Committee in Manchester recently put forward a proposal to establish artificial sunlight centres at the public baths in the city, and the proposal came before Dr. R. Veitch Clark in his capacity of medical officer of health. Dr. Clark's reply to the proposal was substantially this:—

"There is only one correct way in which to regard the use of ultra-violet rays—i.e., to view them as a means of medical treatment. Any scheme which does not provide for adequate medical supervision, both of the clinic and of the people who receive the treatment, is not a mode of action which can properly be adopted by a public health authority. Ultra-violet rays exert an extremely powerful influence on the body; thus, the constitution of the blood is very profoundly changed, and a high degree of stimulation is possible in many individuals subjected to these rays. The dosage, therefore, must be carefully graduated and controlled to suit each individual if the possibility of harm is to be avoided. This control can only be effected properly by medical supervision."

The Ministry of Health have refused their approv of any such installation unless the equipment a the patients are under the personal control a supervision of a medical man or woman who h been specially trained in the use of ultra-violet r apparatus. Dr. Clark therefore felt himself unable support the proposal of the Baths Committee.

INFECTIOUS DISEASE IN ENGLAND AN WALES DURING THE WEEK ENDED FEB. 11TH, 1928.

Notifications.—The following cases of infectio disease were notified during the week:—Small-po 369 (last week, 386); scarlet fever, 1832; diphtheri 1562; enteric fever, 48; pneumonia, 1578; puerper fever, 53; puerperal pyrexia, 107; cerebro-spin fever, 11; acute poliomyelitis, 11; acute poli encephalitis, 1; encephalitis lethargica, 3 dysentery, 17; ophthalmia neonatorum, 125. The was no case of cholera, plague, or typhus fever notifi during the week.

The cases of small-pox were notified from the followi 25 counties: London, 5 (Holborn 1, St. Pancras 2, Sout wark 2); Berks, 2 (Reading, Bradfield R.D., 1 each Buckingham, 1 (Amersham R.D.); Chester, 2 (Maccl field); Derby, 12; Durham, 87; Gloucester, 4 (Bristol Gloucester 1, Kingswood 2); Hertford, 3 (St. Albans Watford 2); Lancaster, 29; Lincoln, Parts of Kesteven Parts of Lindsey 2; Northampton, 2 (Daventry Wellingborough 1); Northumberland, 14; Nottingham, 2 Somerset, 1 (Wells); Southampton, 1 (Kingsclere R.D. Stafford, 5 (Newcastle-under-Lyme); Suffolk East, (Ipswich); Surrey, 1 (Guildford); Warwick, 14; Yorkshi North Riding, 12; West Riding, 37; Brecknock, 1 Glamorgan, 32; Monmouth, 67.

The number of patients at the Infectious Hospitals of t Metropolitan Asylums Board on Feb. 14th–15th was follows:—Small-pox, 19 (including 3 cases and 1 cont under observation); scarlet fever, 1749; diphtheria, 256 enteric fever, 23; measles, 1409; whooping-cough, 17 puerperal fever, 19 (plus 14 babies); encephali lethargica, 76; poliomyelitis, 1; "other diseases," At St. Margaret's Hospital there were 11 cases of marasm and 9 babies (plus 5 mothers) with ophthalmia neonatoru

Deaths.—In the aggregate of great towns, includi London, there were 2 deaths from small-pox, 1 (0) fro enteric fever, 78 (45) from measles, 5 (2) from scarl fever, 39 (4) from whooping-cough, 40 (7) fro diphtheria, 41 (5) from diarrhœa and enteritis und two years, and 111 (24) from influenza. The figur in parentheses are those for London itself. Of t 33 fatal cases of measles outside London, 8 we reported from Manchester, 6 from Bristol, 5 fro Sheffield, and 3 from Warrington, while the figu from Glasgow and Dublin for the same week we 26 and 13 respectively. The number of stillbirt registered during the week was 295 in the great tow including 46 in London.

The two deaths from small-pox were reported fr London (Southwark) and Newcastle-on-Tyne. The form was that of a man, aged 45, the cause of whose death w entered in the certificate as (1) subacute nephritis (2) chro bronchitis, (3) discrete small-pox. The latter was that a man, aged 53, of no fixed abode, who was in the small-p hospital with "very mild small-pox" from Dec. 2nd–17 and who died in Wingrove Hospital on Feb. 2nd, his certific being filled in thus: (1) pericarditis, (2) debility followi small-pox, (3) tuberculosis of lungs (no post-morter This man's vaccinal condition was given as: success vaccination (infancy only), two marks, total area one-h square inch.

MARGARET-STREET HOSPITAL FOR CONSUMPTION. At the annual meeting of the governors of this institut it was stated that the hospital, which is situated just Cavendish-square, London, was used by the Ministry Pensions as a clinical centre to which are referred pensio officers and nurses whose disability is classified as pulmon tuberculosis. More than 360 such cases have been de with, of whom over 100 are receiving treatment. Increas use is being made of the dental evening clinic established 1925. The need was pointed out for a sanatorium for wom and children; at present men only from the out-pati department can be treated at Fairlight Sanatorium.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS

New Pensions Hospital.

On Monday, Feb. 20th, the House of Commons went to Committee of Supply on a supplementary estimate ken vote of £10 for expenditure in respect of sundry iblic buildings in Great Britain not provided for in other tes.

Sir V. Henderson, Under Secretary to the Home Office peaking on behalf of the First Commissioner of Works), plained that this token vote was really in connexion with e provision of hospital accommodation in a new Ministry Pensions hospital at Dunston Hill, Newcastle-on-Tyne. ie new hospital would deal, he said, with general medical d surgical cases. The present hospital had been in use ice 1920, but the accommodation there was now more than s required. The present hospital accommodated about 0 patients, whereas the actual requirements at present l not exceed 120. It was held on a three years' lease, ich expired on Sept. 30th of this year. The nurses ployed at the hospital were quartered in a building ne distance away, at a rental of £315, and the lease of ir quarters would expire about July 30th of this year. had now been decided to rehouse the patients and the rses in one building, and arrangements have been made take a lease for 14 years of the old manor house and unds known as Dunston Hill, five miles from Newcastle. e lease was determinable, if necessary, at the end of en years, and the rental was £330 a year. The cost of alterations and works services would be £22,565, while niture and fittings would cost £625, and removal expenses 25. It would house 120 patients and would also accommoe the nursing staff. The rehousing, so far as the nurses re concerned, would be complete by July of this year. was estimated that there would be a saving on the new eme of not less than £6800 per year. It was possible to l with the matter by a token vote, owing to the necessary ney having been obtained from savings on certain other vices.

Lieut.-Commander Kenworthy said that the scheme was ery good one indeed. He congratulated the Ministry of sions on deciding to remove this hospital out into the ntry and he wished that had been done in 1920 when the ginal hospital was acquired. He had never been able to erstand why so many hospitals under the Ministry of sions had been placed in noisy towns and on main ffic routes. That was a mad thing to do. They ought have been taken out into the country and accommodated he country houses which were now a drug on the market. his experiment proved successful he hoped that it would tried elsewhere. The lease of the new hospital was, his opinion, too short; it ought to have been for years. After it ceased to be necessary for the use of Service men it could be taken over by the Ministry of alth and used for the treatment of tuberculosis. There a tremendous shortage of such hospitals on the north-coast. He believed that the real solution of the difficulty ld be to have Government hospitals in the future.

Sir V. Henderson said that it would be out of order him to deal with the question of the future of the hospitals with the question of their control by the Ministry of alth. The Office of Works considered that 14 years' lease quite sufficient. The new hospital would be well away n the road and the house stood in its own grounds.

The vote was agreed to.

Health Insurance.

On a supplementary estimate of £340,000 for the salaries expenses of the Ministry of Health, including grants id, in respect of benefits and expenses of administration er the National Health Insurance Acts.

The vote included a sum of £210,000 in respect of sickness blement, maternity, &c., benefits additional to the inal estimate.

Sir Kingsley Wood (Parliamentary Secretary to the istry of Health), in presenting the estimate, explained the £210,000 was necessitated by the continuing high enditure on benefits by the approved societies. There been an increase in the number of attendances of insured ons for medical treatment, and claims for benefit had n made very freely. This state of affairs, no doubt, was ntuated in a time of considerable unemployment. as a very disturbing position. The Ministry of Health taken every suitable opportunity of reminding societies he need of strengthening the supervision of insurance ns by such means as improved sickness visitation and use of the Regional Medical Services. The matter had n constantly discussed with the medical profession at ry conferences, and the British Medical Association had the matter under close consideration as a result of a meeting with them on Jan. 19th last. New regulations were brought into operation from Oct. 1st, 1927, whereby a fortnight's delay was imposed on the transfer from one doctor to another, except where both doctors consented. That might have some material effect on these claims.

Criticism of Panel Practitioners.

Mr. Rhys Davies said they were informed that 150,000 persons had come into the Health Insurance scheme as voluntary contributors under the Widows and Orphans Contributory Pensions Act, about 10 per cent. above the estimate of the Actuary, and surely the Minister of Health must be aware that these lives were not so good as the lives of those who were compulsorily insured. He wished to ask whether that increase in the actuarial estimate did not contribute partly to the amount required under this supplementary estimate. He also criticised the medical profession because what they were failing to do accounted more than anything else for this increased expenditure. Three of the approved societies in Durham had made a complaint about loose certification. No approved society, so far as he was aware, declined any genuine claim for disablement or sickness benefit at any time, but when they were doubtful and suspicious that a doctor was giving medical certificates merely to increase the number of insured persons on his panel, the societies were entitled to say that that doctor should be stopped. He knew that members of the medical profession were very much irritated when any criticism was levelled against them, and he felt sure that they would hear, in the course of that discussion, that the panel doctor could not increase the number of insured persons on his panel merely by granting certificates loosely. But if it was known that a doctor would grant certificates without adequate examination, while another doctor insisted upon adequate examination, a panel patient would sometimes go to the doctor who was most loose in his certification. The Insurance Committee for the County of Durham had passed a resolution asking the Minister of Health, to whom they sent the whole data, to conduct an inquiry into this subject of loose certification. What was the Minister of Health doing about it? As a matter of fact the Minister of Health was afraid of the medical profession. When it was a question of dealing with a board of guardians they had heroics, but when the British Medical Association was "on the job" then the Minister quaked at once. Was it true that this increased expenditure was in part due to the fact that the stamina of the people had deteriorated because of poverty and destitution? Was it the experience of the approved societies that the increased sickness was greater in the distressed areas? That could easily be found out. He was very sorry to be so critical of the medical profession, but in Lancashire there had been criticism in connexion with the method of prescribing. Some persons argued that they were not getting sufficient medicine; for his part he wished they took less of some of the medicines there were taking. The fact that the panel practitioners were not carrying out their duties under the National Health Insurance Act accounted in great measure for this increased expenditure. He would give some figures to prove that where a panel practitioner had a great number of persons on his panel he was not so careful in prescribing for the chemist. In cases where a doctor had 2500 persons on his panel the average frequency per insured person in connexion with prescription was 0·354; when he had less than 1000 persons on his panel the average frequency was 0·237. There had been several allegations in Salford that doctors had been "touting," and he understood that there had been an inquiry into the allegations. He would like to know what was the result of that inquiry. He wished to add that the medical profession, as a whole, could not be charged with doing what he had suggested. They were not guilty of it, but only just a few, who ought certainly to be brought to book by the Ministry of Health and made to do their duty to the State and to the approved societies. It was a fact that some approved societies had had to realise their investments to meet the claims for benefit. That was the most serious aspect of the work of the societies, and this was the first time that they had been in this position. Were it not for the interest on their investments, the approved societies would now be heading straight for bankruptcy. In 1926 the total sum brought into the approved societies' funds in contributions amounted to £24,000,000; the Treasury grant was £7,000,000; and the interest on investments £6,000,000—a total of £37,000,000. Payments in respect of benefit amounted to £30,000,000, and the cost of administration to £5,000,000. That made a total of £35,000,000, and left a balance of only £2,000,000. The interest on the investments of these societies ought to be safeguarded by the Minister of Health, but he had been brow-beaten by the Chancellor of the Exchequer. Did the extension of the average age of the insured persons in the last decade account for the increase in the average rate of sickness? He wished to ask some questions with regard

to the work of the regional medical officers. Was it a fact that some panel doctors, who were in practice themselves, were also acting as regional medical officers? He took it for granted, of course, that a panel doctor did not become a judge of his own case. How many regional medical officers were there, and were they sufficient? How many regional dental officers were there? The work of these officers had been very good; were there sufficient to carry out their task? The Minister of Health might consider the appointment of some one to act in the same capacity in relation to optical treatment and appliances as he had done in regard to dentistry. Such an appointment was very necessary, because he was sorry to say of all these professions that once they saw an accumulated sum of money in the funds of approved societies, they began to organise definitely in order to get their share. Primarily that money belonged to the insured population, and the Minister of Health ought to appoint some person to check the opticians, just as the dentists were now being checked.

Certification Difficulties.

Mr. MELLER said he found himself very largely in agreement with Mr. Davies. He had brought before the Committee some matters which deserved the very close attention of the Minister of Health. He was very glad to find that in Mr. Davies's reference to the sickness experience of societies he did not allege that there was malingering amongst insured persons. He believed that malingering in this country was very rare, and he believed also that the malingerer was made and not born. If any malingering had occurred in connexion with the sickness experience of societies in this country, it had been due, very largely, to the lax methods which had been adopted by the medical practitioners, and he wanted to join with Mr. Davies in saying that, although the allegations which he had made with regard to doctors extended only to a few, and that a very large proportion of doctors endeavoured to carry on their work quite fairly and properly in the best interests of their patients, there were, unfortunately, many instances in which doctors had not paid that regard to the patient which they ought to have paid. They had been free enough to give medicine where medicine might not have been required, but had been slow in giving what he believed was very much better than many bottles of medicine—that was to say, moral courage to the person not to remain upon the funds—to give them a few healthy admonitions and send them about their business. In his view, and there were many instances to prove it, the medical profession had themselves said that their difficulty had arisen from the fact that they found it extremely hard to maintain the patients on their panel with the competition of other doctors in the neighbourhood. Many a man started to-day not by buying his practice but by putting up his plate and hoping that the number of insured persons would be fairly distributed in the district, and that he would get his share. It was not perhaps unnatural for him when he was told that the patient was suffering from some complaint which he could not diagnose and which he could not disprove, to give him his certificate quite readily. There had been instances, and a good many unfortunately, of medical men themselves saying that patients had come to them and said, "If you do not give the certificate I can get one down the street." The medical man in such a case had found himself in the dilemma of either retaining the patient or seeing him go to another doctor, and in this way he might lose not only insured patients but patients who might not be insured persons. It was a difficult position, and unfortunately it seemed to be spreading. The best men in the medical profession were standing out against it and wanted to stop it, and he believed that the Ministry of Health was anxious to assist the strong doctor in resisting these unfair claims upon him and the unfair competition of certain men in the profession. One point which he (Mr. Meller) regretted very much indeed was the comparative ease of transfer from one panel doctor to another which had been allowed. Under the old system when a period of six months or even a year was required there was no hardship to the insured person, but it gave the doctor the opportunity of acting as firmly as he ought to act. The present practice which gave the opportunity of transferring at any moment, with the consent of the late doctor and the proposed new doctor, or the other common practice that with a fortnight's notice a man or woman might transfer from one doctor to another simply because they might have been upset by something the doctor had said, was improper and ought to be stopped. Indeed, he believed that the medical profession themselves were in favour of a longer period between the transfer from one doctor to another.

Mr. Davies had made some reference to the regional medical officers. That body was set up some time ago because it was discovered that a very large number of claims were being made upon societies without any real grounds to justify them. Certificates of comparatively minor ailments continuing for some time, such as debility, were given, and there was no satisfactory means of checking the doctor. Thereupon the Ministry set up regional medical officers, and what had been the result? If hon. Members would turn to the report of the Ministry of Health for 19[illegible] they would find there some figures with regard to the number of cases submitted for examination in that year, and they would find that some 420 cases were sent by societies to be examined by the regional medical officers because the societies had some doubt as to the genuine incapacity of the insured persons concerned. There were 450,000 cases referred, and of that number about 60 per cent. either declared off before the examination or were found to be capable of work, while only about 40 per cent. of the people who had been referred by the societies were found to be incapable of work. It did seem that there was something wrong in a method of certification which allowed certificates to be issued in respect of 60 per cent. when they ought not to have been issued, and that only 40 per cent. of the cases were incapable of work. If it meant that they needed further examination, further overseeing of the medical men, he hoped that the request of Mr. Davies would be acceded to by the Ministry of Health. Some reference had been made to the fact that certain of these medical officers were themselves in practice and were conducting their examinations as part-time officers. Perhaps in fairness to them it ought to be stated that they did not examine within their own area, but he agreed that it would be very much better to have these medical referees entirely free from any suspicion, and devoted only to the work of examining panel patients and not having to bring up against them their own private practice.

Health Conditions in Monmouthshire.

Mr. BARKER said he rose to oppose this grant to the Ministry of Health. The condition of health in his constituency, and in Monmouthshire generally, was deplorable in the extreme. There was more disease there to-day than had been known for 20 years. The medical officer of health of the Brynmawr Urban District Council in a report recently published said that up to the present 140 cases of small-pox had been attended to. One cause of the spread of small-pox was that the people were not taking sufficient nourishment, particularly the children, among whom the great[illegible] number of cases had occurred. The Ministry of Health was not fit to be entrusted with the spending of any money. The medical officer of health of Nantyglo in a report published last December said the water was dangerously polluted, small-pox was spreading, the death-rate was twice what it was in the previous month, and 78 per cent. of the male population were unemployed. The same medical officer said that the people were under fed. Dr. Rocyn Jones, medical officer for the county of Monmouth, has stated this month that small-pox continued its devastating work among the people of Monmouthshire. They had had 2200 cases of small-pox in the county since the epidemic commenced in February, 1927, and 522 cases, or 24·9 per cent., were said to be vaccinated. The medical officer further said that hospital accommodation was being taxed to its utmost. The disease was continuing to spread, many areas being involved. He also made the statement that the County Council had spent over £22,000 on this disease and that in a very short time they would have to spend £100,000. The health of the working classes, Mr. Barker contended, was being endangered by the apathy of the Ministry of Health.

Altered Relations between Practitioner and Patient.

Dr. VERNON DAVIES said that there seemed to be in that debate rather a concerted attack upon members of the medical profession, which might perhaps, to a certain extent, have been justified, or might not. One of the fundamental difficulties of the National Health Insurance Act was the question of certification and the free choice of doctor. The whole system of medical behaviour between doctor and patient had been altered. In the old days the doctor, as a rule, was the friend, helpmeet, and medical adviser of his patient, and his patients trusted and obeyed him. But the Insurance Act created a new state of affairs and the medical man, instead of being the master, became the servant of the insured population. They could take him on when they liked and dismiss him when they liked. Panel practitioners were human beings, and in the majority of cases had their living to earn. As a rule, panel practitioners were as good, or as bad, as ordinary individuals, and they could be divided into three sections. There was the man who was conscientious, honest, and determined to do his best, and, at the other end of the scale, they had the man who was perhaps not so particular. He would not say that he was dishonest, but perhaps he was a little lax and careless. Between these two extremes was the man who wanted to do what was right and was not able to do so. What was the reason? A patient came to the doctor to get a certificate. The doctor, if he was honest, as all doctors would like to be, gave a certificate if he thought that the patient was entitled

to it. The difficulty did not occur at the onset of the illness, but towards the end, when the patient should go back to work. The doctor might think that the patient was fit for work, but the patient might think that he was not, and desire to draw benefit a little longer. The honest, conscientious doctor would cross the man off; but the doctor who was not quite so particular said to himself: "I might as well please my patient." The other man perhaps said: "It is my object to have as many patients as I can, and if I can please my patients it does not matter about the National Health certificate." So long as they gave the patient the free choice of doctor they would be up against that difficulty. The difficulty did not always end there, because the man might have a family of five or six children who were private patients. The man might leave the doctor and not allow any of his family to go to him. Moreover, the same man might say to his friends that Dr. So-and-So was too particular and signed one off far too quickly. The doctors undoubtedly were to blame in certain cases, and he had no desire to stick up unnecessarily for the medical profession. On the other hand, they must remember that they were putting very great temptations in the doctor's way. The doctor was in a very difficult position. He might be deceived by patients in certain cases if the patients wished to deceive him.

The Approved Societies.

On the other hand, the doctor was up against the approved societies, who were a perfect nuisance, and an extremely foolish body of individuals. An essential point in the administration of the National Health Insurance Act was that the medical man, the approved societies, and the chemists should work together, because their aims were the same—namely, to keep the insured persons healthy and to administer the funds to the best advantage. The approved societies did not like to pay benefit if they could help it, and when benefit was paid they were anxious that the patient should get off benefit as soon as possible. He would not say that they went spying round, but they sent their visitors, and if a poor woman happened to be lifting a kettle off the fire, or if she had a duster in her hand, or if a man happened to be out one minute after 6 o'clock, there was trouble. Instead of working with the medical men, the societies were too apt to send cases to the medical referee. He had found over and over again when he was in practice that the majority of cases thus sent to the medical referee were the absolutely genuine cases and the particularly doubtful cases had never been spotted at all. If the approved societies had asked his honest opinion they would have got it, and in that event they would have been able to send to the referee the proper cases. They had worked against the medical men because in the old days of the club they had the medical men under their thumb, and had never forgiven the Ministry of Health and the Government for deciding that the doctors should not be put under the approved societies. It was absolutely necessary that they should make the right of free transfer very much more difficult than it was. No patient should be allowed to transfer without giving a specific reason. Mr. Rhys Davies had said that there had been a lot of over-prescribing. That was true, but again the doctor was in a very difficult position. If a patient said he was ill and wanted a bottle of medicine and the medical man refused to give him one, and told him to go home and do something that would do him good, the patient thought that he was not being properly treated and that the doctor was no good. Such a doctor might find that a complaint had been made against him to the Medical Committee or the Insurance Committee, and that might cause him some trouble. Therefore, when a doctor found that he had a discontented patient, he gave a bottle. When he went into practice in Lancashire it took him years to persuade certain patients that they were better off without a bottle of medicine than with it. A doctor in the old days gave a patient a bottle purely for financial reasons. Fortunately, at the present day people were getting better educated and recognised that medicine was not always necessary. At the same time there was in the industrial population the greatest belief in the efficacy of a bottle of medicine and they could not afford altogether to neglect the psychological effect. He thought that a panel of 2500 was far too many for any medical man. As a rule, doctors had private patients as well as panel patients. The danger was that a doctor might miss something and then there was a scandal. But what was the doctor to do? If a doctor had 2000 patients on his panel it meant about £800 a year. That sum did not go far, as the expenses of a doctor were appalling. The result was that a doctor must have a big panel to make it a paying proposition, and if they gave him a big panel he could not do the work properly. At some time or other he was bound to neglect it and there would be complaints. Mr. Rhys Davies had also raised the question of "touting" for patients. That was another curse of the National Health Insurance Act. There could be no doubt that since that Act came into force the standard of medical men had deteriorated and there was not the same class of men coming into medicine to-day as there was 15 or 20 years ago. His impression was that medicine, instead of being a profession, was now becoming a trade. Therefore, they would get these cases of "touting" where a young man anxious to make a practice would do something or other to get others in. Referring to the remarks of Mr. Barker, Dr. Davies said that malnutrition was not a cause of small-pox. If people would get vaccinated they would not get small-pox. Proof of that could very easily be found. The only reason there could be for a huge epidemic was that 50 per cent. of the children were unvaccinated. The sooner members of the Labour Party understood that fact the better.

Mr. WHITELEY said that there had been loose certification in Durham. There was a great desire in that county that there should be an inquiry. Something ought to be done, at least to show these medical men that they could not go on doing as they liked without any regard either for the patients they attended or the approved societies of which the patients were members.

Reply to the Debate.

Sir KINGSLEY WOOD, replying to the debate, said that the increase in the level of sickness had been pretty general, and was not characteristic of any particular industry. He wished to correct the view that had been put forward as to the number of insured people who were permitted to go on the panel of a particular doctor. The figure of 2500 had been mentioned, but that was not correct. The maximum number of insured persons permitted to a single panel practitioner was 2000. The average number of insured persons on doctors' panels up and down the country was not anywhere near 2500, but about 1000. It was a matter of considerable controversy and anxiety why the very large sum of money provided under the Insurance Act for sickness benefit should have been exceeded. It was true that the influenza epidemic did not wholly explain the persistence of the high expenditure, and it might be that insured persons were looking more carefully to their rights under the Insurance Act, and that their claims for benefit were being made much more freely. The statements which he had made in that House 12 months ago had been very amply confirmed in all parts of the House that night. He found that the number of cases referred to the Regional Medical Officers for a second opinion rose from 201,291 in 1921 to 377,180 in 1926, which was an abnormal year owing to the industrial troubles in that period; and was actually 313,011 in 1927. Comparing the figures of 1927 with those of 1925, he found that the number of persons referred to the Regional Medical Officers had increased by 55 per cent. These were astonishing results, because the proportion of persons examined who were found to be capable of work increased from 24 per cent. to 28·8 per cent. Another astonishing figure was that 44 per cent. of the people who were referred to the Regional Medical Officers failed to attend the examination, or "declared off" before the date of their examination, and the proportion of persons referred for examination who came off the fund, either by failing to attend or as the result of the medical examination, increased from 57·7 per cent. to 59·8 per cent He was not going to endeavour to say who was responsible, whether it was the people who presented themselves for examination, or who failed to attend after notice had been given to them that their case was going before the Regional Medical Officer, or whether it was due to faulty certification by the medical profession. But these facts showed that the approved societies and the medical profession of the country had seriously to take this matter into account, because this excessive sickness was bearing on the approved societies, and the people who had to stand the racket in the end were the insured persons. It was only right that, so far as they were concerned, the very greatest care and precaution should be taken in regard to the administration of their affairs. With regard to the financial position of the societies, a very interesting thing, which would be of great benefit to the health of the community and the next generation, was that additional benefits costing in the aggregate upwards of £8,000,000 a year were at present being distributed out of surpluses made available as a result of the last valuation of the approved societies. This large amount of additional expenditure was being made largely out of current funds, without drawing on existing accumulations of funds. It was ridiculous to suggest that the societies could distribute these large surplus funds without making some realisation of the assets available for that purpose. The investigations into sickness should be of various kinds. In the first place, the Ministry had impressed on the approved societies their responsibility in the matter. In the second place, the Ministry had had a conference with the British Medical Association, who were engaged in an inquiry into this particular matter. Thirdly, the Ministry had advised the increased use of medical referees. The department was anxious to obtain, as far as possible, self-government by the approved societies

and to secure that National Insurance, so far as possible, should be conducted by the societies themselves.

Mr. RHYS DAVIES: Is the hon. gentleman aware that the approved societies have little control over the medical profession?

Sir KINGSLEY WOOD said that Mr. Davies knew the difficulties and delicate matters that obtained in a profession of this kind, but he thought that a very fair balance had been struck between the representatives of the approved societies on the one hand and of a great profession on the other. "You cannot," Sir Kingsley Wood went on, "make the medical profession the servant of the approved societies, but administering as they do an Act of this kind, they must be prepared to obey certain rules and conditions which I think are fair and sufficient. This discussion will serve a useful purpose in bringing these facts before the country. The House has seen the serious state of affairs as far as sickness is concerned. The speech of Mr. Davies was a reasonable one, and did not disguise the seriousness of the position, or the fact that there is a large number of people obtaining benefits which they ought not to obtain. Everyone who values the work of the approved societies must realise that these things must stop."

Effect of Insurance on Health.

Dr. WATTS said he held no brief for the panel doctor. Indeed his personal opinion was that any man in the medical profession who accepted service under the National Insurance Act deserved what he got. The Act had had an ill-effect on the health of the country generally, and he knew personally that there were many people in the graveyards of this country to-day who would not be there but for the National Health Insurance Act. That Act was the greatest fraud ever perpetrated upon the country, and his suggestion was that it should be repealed. In regard to the question of certification, the panel doctor naturally took the line of least resistance and accepted the statements of his patient, as it would be manifestly impossible to make a thorough and detailed examination in each case. Therefore it was unreasonable for hon. Members to blame panel doctors, foolish and misguided individuals though they might be, to take service under the National Health Insurance Act. Unquestionably the approved societies had of late years been entirely wrong in their administration of the Act.

The vote was agreed to by 189 votes to 96.

HOUSE OF LORDS.

TUESDAY, FEB. 14TH.

Children and Traffic Accidents.

The BISHOP OF SOUTHWARK called attention to the statement of the Education Officer of the London County Council that in 1926, in the metropolitan police area, 233 children were killed and 9528 were injured through traffic accidents.

Viscount PEEL (First Commissioner of Works) said that the Advisory Committee on Street Accidents appointed by the Minister of Transport had presented a report about a year ago. The Committee was set up because of the anxiety of the Ministry of Transport to see what could be done to cope with dangers of the streets. Even before the Committee reported the Minister had summoned a conference of local authorities, different Government departments, interested persons connected with motoring, &c., to discuss these problems. A circular was sent round to education authorities urging them to do what they could to educate children in regard to the dangers they incurred in crossing the streets and matters of that sort. They also called attention to the necessity for playgrounds being provided so that the children could be kept off the streets. It was, however, very difficult to provide sufficient playground accommodation in overcrowded districts, of which Bermondsey was an example. The Bishop of Southwark had suggested that a committee should be set up to inquire further into this question. He (Lord Peel) understood that the Advisory Committee were now considering these problems and would report very soon to the Ministry of Transport. In view of this, he thought it was hardly necessary at this moment to set up another committee. The Minister of Transport, however, had authorised him to say that he was prepared to give a special direction to the Committee to consider particularly the problem of accidents to children and consult with representatives of the police and local authorities in order that they might decide upon certain definite rules to reduce the number of accidents to children.

HOUSE OF COMMONS.

TUESDAY, FEB. 14TH.

Scottish Creameries and Preservative Restrictions.

Brigadier-General CHARTERIS asked the Secretary of State for Scotland whether the representations which had been made by the creameries of Scotland regarding the effects both on their business and on the supply of cream to larg towns, of the recent order restricting the use of preservativ in cream had been investigated; if so, with what result and whether he was prepared to receive a deputation o interests affected in the near future.—Sir J. GILMOUR replied Only a few creameries in Scotland have made representation regarding the effect of the prohibition of boric acid in cream Since Jan. 1st, the date when the regulations came int operation in regard to cream, the Scottish Board of Healt have made inquiries in many districts and cities affected The reports obtained show that in the south and south-wes of Scotland there has been some trouble with cream goin sour, but to a considerable extent this is to be attribute to the fact that no sufficient use was made of the two an a half years given as a period of grace by the preservative regulations, so as to secure improvement in the methods an conditions of production and distribution. Active steps ar now being taken by many creameries, including the promotio of clean milk competitions among producers to improv the hygienic and keeping qualities of the milk from whic cream is produced. There is substantial evidence that crear properly produced from clean milk, and properly handle will keep sweet for several days. The Scottish Board o Health accordingly see no reason to rescind the regulation as far as they apply to cream, and as a deputation from th creameries concerned was received last September, ther appears to be no necessity for a further interview on th subject at present.

Dental Charges to Approved Societies.

Mr. BROMLEY asked the Minister of Health if his attentio had been drawn to the charges made on approved societ members by dentists supplying artificial dentures and fo extractions; and, if so, whether, seeing that the charge so made were excessive in comparison with pre-war charge for similar supply and extraction, he would inquire if suc charges were in proper relation to the economic value o the dentures supplied and the services rendered.—S KINGSLEY WOOD replied: The charges referred to by th hon. Member were arrived at by direct negotiation betwee representatives of all types of approved societies and repr sentatives of the dental profession. They have bee voluntarily adopted by more than 95 per cent. of societie and my right hon. friend thinks, therefore, that they represer the best terms on which societies have found it possible t secure a satisfactory service for their members.

WEDNESDAY, FEB. 15TH.

Portsmouth Naval Hospitals.

Sir FREDERICK HALL asked the First Lord of the Admiralt what number of patients could be accommodated in th naval hospitals in the Portsmouth district; what was th average number of patients in residence; and what wa the annual cost of keeping up this accommodation.—M BRIDGEMAN replied: The only naval hospital in the Port mouth district is the Royal Naval Hospital, Haslar, Gospor The total peace accommodation of the hospital is officers, 8 men, 1059. The average number of cases daily und treatment during the last three years was 1927, 386; 192 381; 1925, 338. The annual cost of the hospital durin the last three years (ending Sept. 30th in each case) was a follows: 1926–27, £105,419; 1925–26, £106,406; 1924–2 £104,377.

International Opium Convention.

Mr. CAMPBELL asked the Secretary of State for Foreig Affairs whether the International Opium Conventio signed at Geneva in February, 1925, had yet come int force; and, if not, how many ratifications were still require before the Convention became operative.—Mr. LOCKE LAMPSON replied: The Convention is not yet in force, a three out of the necessary seven ratifications by members o the Council of the League are still lacking.

Tinned Milk Production on the Continent.

Mr. JOHNSTON asked the Minister of Health why h sent a commission of persons to inquire into the sanita conditions in which tinned milk imported into this count from Holland and Denmark was produced; and why h had not instituted similar inquiries into the milk produc being imported from Switzerland and the United Stat of America.—Mr. CHAMBERLAIN replied: I sent the co mission to Holland and Denmark to ascertain what found tion there might be for allegations which had been ma that in those countries the sanitary conditions of mi production were inferior to those obtaining here, and th regulations less stringent. About 75 per cent. of the tot imports of condensed milk (including about 95 per cent. the imports of condensed skimmed milk) come from tho countries. A considerable amount of information is in th possession of my department as to the conditions of produ tion in the United States of America as a result of visi which have been paid to that country on other occasio by officers of this department. The quantities of condens

imported from Switzerland at the present time are ively insignificant.

No Children's Bill this Session.

scountess ASTOR asked the Home Secretary if it was osed to introduce during the present session a new ldren's Bill to amend the Children's Act of 1908.—V. HENDERSON replied: My right hon. friend much ets that, owing to the pressure of Parliamentary business, ll not be possible for him to introduce a Children's Bill session.

THURSDAY, FEB. 16TH.

Conditional Disability Pensions.

r. BROMLEY asked the Minister of Pensions the number en in receipt of conditional disability pensions, and the ber that had been in receipt of conditional pensions for years or more; and if he would consider the granting ese men life pensions at their present rate of assess-.—Major TRYON replied: The total number of men ceipt of conditional pensions on Dec. 31st last was t 146,000, of whom the great majority had been in pt of pension for four years or more. I agree with the Member about the desirability of making final awards on as this can fairly be done, but to make such awards out medical consideration of the individual cases would e in the best interests of pensioners.

Ex-Service Men and Neurasthenia.

r. STEPHEN asked the Minister of Pensions the amount per head to the Glasgow Parish Council for ex-Service suffering from neurasthenia and undergoing mental ment in the local authority institution.—Major TRYON ed: Cases of neaurasthenia for which the Ministry esponsible are not sent for treatment by the Ministry nstitutions belonging to the parish council. Where, ny other circumstances, the parish council charge for tenance of a pensioner, the average charge is, I am med, 25*s.* 9*d.* per week.

Scottish Pensioners and Hospital Treatment.

igadier-General CHARTERIS asked the Minister of ions the total number of cases from Scotland treated e Ministry hospitals at Bellahouston, Craigleith, and hall during 1926; whether there was any intention of ng any of these hospitals; and whether he would an assurance that a Ministry of Pensions hospital d be maintained in Scotland so long as the number of requiring treatment was not less than the number ed at the smallest similar hospital in England and s.—Major TRYON replied: The total number of cases ed at the three Ministry hospitals in Scotland—namely, houston, Craigleith, and Edenhall—in the course of ear 1926 was 3362. There has been a considerable n the number of pensioners requiring treatment since year, the number of in-patients on Feb. 10th last ng been only 226, as compared with 557 on the corre-ding date in 1926, a decline of more than one-half. hese circumstances the hospital accommodation in and has had to be considered and arrangements have made to close one of the three hospitals—namely, leith—at an early date. With regard to the last part e question, my hon. and gallant friend may rest assured we shall maintain hospital accommodation in Scotland e best quality that can be got, and under our own ol for as long as it is needed.

Salaries of County Medical Officers.

ptain CROOKSHANK asked the Minister of Health her he had consulted the Law Officers of the Crown regard to the action of his department in refusing to grants towards the salaries of county medical officers other medical persons unless such salaries were in d with the schedule of the British Medical Association, if so, with what result; whether he was aware of the sfaction felt by the Lindsey County Council with regard ch a case; and whether his action was now to be fied in view of the terms of the Trades Disputes and es Unions Act of 1927.—Mr. CHAMBERLAIN replied: eply to the first part of the question is in the negative, o the second part in the affirmative. As regards the part, I am at present unable to see that the Act to a my hon. and gallant friend refers has any bearing this matter.

Nutritive Value of Tinned Foods.

r. FENBY asked the Minister of Health whether, in of the increasing consumption in Great Britain of d foods, he would say what steps were taken to ensure they were sound; and what effect, if any, they had e national health.—Mr. CHAMBERLAIN replied: Tinned , in common with other foods, are subject to inspection they are offered for sale, and, in the case of imported odities, at the time of importation. They may be l and destroyed if they are found to be unsound or otherwise unfit for human consumption. I am advised that the nutritive value of tinned foods is, in general, comparable with that of other cooked foods.

Invalidings from Royal Navy.

Sir BERTRAM FALLE asked the First Lord of the Admiralty the number of naval ratings invalided from the Royal Navy between Jan. 1st, 1927, and Dec. 31st, 1927; the number in which the invaliding disability was accepted as attributable to service; the number of ratings invalided with tuberculosis during the same period; and the number of tuberculosis cases in which the invaliding disability was accepted as attributable to service.—Lieut.-Colonel HEADLAM (Parliamentary Secretary to the Admiralty) replied: The numbers are respectively: 1359 and 84; and 180 and 18. Royal Marines are included.

TUESDAY, FEB. 21ST.

Notification of Venereal Disease in Scotland.

Mr. BUCHANAN asked the Secretary of State for Scotland the number of towns, if any, in Scotland which had approached him for power to make venereal disease compulsorily notifiable; and if he intended to exercise his powers in this direction in any town.—Sir J. GILMOUR replied: Since August, 1921, resolutions in favour of the general principle of compulsory notification of venereal disease, in one form or another, have been submitted to the Scottish Board of Health by 29 burghal authorities, by combined venereal diseases authorities representing burghs in Ayrshire and Lanarkshire, and by the Convention of Royal Burghs. The Corporation of Glasgow at a deputation about a year ago also raised the question of compulsory notification. In present circumstances I do not consider that the exercise of such powers as the Board have under the Public Health (Scotland) Act, 1897, would be an appropriate method of dealing with the matter.

Mr. BUCHANAN asked whether, in view of the fact that certain Corporations were approaching the House for powers, it would not be better, before anybody was granted any powers, that full inquiry into the subject should be instituted by the Department?

Sir J. GILMOUR: No, Sir. Much the best way would be to allow the matter to be discussed in the House.

Mr. E. BROWN asked whether the Secretary for Scotland had not also received a number of strong protests against the suggested course of action?

Sir J. GILMOUR said that he had received communications both pro and con.

Mr. HARDIE asked if it was not against the best interests of Government, either national or local, to do things by piecemeal, such as dealing with one town rather than another. Was it not better to have a full review, and then to legislate?

The SPEAKER said that that was a matter to be discussed on the Bill itself.

APPEAL FOR THE LONDON HOSPITAL.—Lord Knutsford has made an appeal for £250,000 on behalf of this hospital, of which he is chairman. It took the form, in the first instance, of a letter to the newspapers, but, on Sunday week, it was broadcast. Two days later Lord Knutsford received 10,000 letters containing money in sums ranging from sixpence to £1500; a day later 18,000 letters were still waiting to be opened.

HOSPITALS AND CHANGING TIMES.—Sir Alfred Sargeant, J.P., presiding, on Feb. 10th, at the annual meeting at Hove of the Brighton and Hove Dispensary and Hove Hospital—the hospital being a branch of the very old-established dispensary—made some pointed remarks on the changing times in connexion with such institutions. From the wealthy borough of Hove, in direct subscriptions to its hospital, only £600 was received during 1927, and Sir Alfred Sergeant, remarking on the fact that the whole character of Hove had changed in the last 30 years, said: "In the old days there were people living in their own houses in our avenues who had lived here for a great many years and had a civic sense—a sense of their duty to the community and their town—and supported the local institutions. Now, unfortunately, we live in flats, and a good many people come here for only two or three years. They don't get rooted in the place; they don't realise their responsibilities, and charitable institutions suffer considerably from that point of view alone. Our endeavour should be not only to ask people for subscriptions, but to instil into them a higher sense of duty to the town." Sir Alfred Sergeant went on to deplore the way they had to get money for hospitals—a half-crown ticket on the chance of securing a freehold house or a motor-car—and expressed the hope that the time would come when they could dispense with tombolas, or even entertainments, and that there would be such a succession of donors and subscribers that their institutions would be kept up as in the past.

Medical News.

THE EUGENICS SOCIETY.—The Galton Memorial Dinner was held under the auspices of the Eugenics Society on Feb. 16th at the Rembrandt Hotel, Brompton, S.W., when Major Leonard Darwin, President of the Society, supported by the Vice-President, Sir Bernard Mallett, presided over a representative gathering. After the dinner, the Galton Lecture was delivered by Mr. C. J. Bond, whose work in eugenics is of particular interest to the medical profession as having had its origin in his experience as a surgeon. His lecture was an important statement in respect of the national need for the organised study of eugenics, and at its conclusion he urged that the medical profession should coöperate in that study more generally and at the same time more closely than is at present the case. The lecturer's appeal was supported by Major Darwin, who outlined the work of the Eugenics Society and warned his audience that national decay could only be averted by individual as well as national effort. Sir Arthur Keith and the Bishop of Winchester respectively proposed and seconded a vote of thanks to the lecturer, when the words of the former had a wide message for the general practitioner in support of the plea for medical coöperation in the work of national eugenics. He affirmed that it was in the countryside rather than in urban areas that the study of eugenics could best be carried on, and he sketched the value to any national stocktaking, with respect to physical and mental equipment, that would accrue from a properly conducted system of education by which the whole population, and not only those below a certain income level, would receive their training in common. Among the guests present at the dinner were Dr. H. H. Dale, secretary of the Royal Society, Prof. Major Greenwood and Dr. D. R. Wilson from the Medical Research Council, Dr. C. S. Myers, director of the National Institute of Industrial Psychology, Lord Dawson, Colonel Fremantle, M.P., the Right Hon. William Graham, Sir William Beveridge, Dr. T. H. C. Stevenson, of the General Register Office, Miss Olga Nethersole, Dean Inge, Mr. Wheler Galton, Mrs. Neville Rolfe, Prof. MacBride, Captain Pitt-Rivers, Sir Dawson Williams, and Sir Squire Sprigge.

LECTURES ON CANCER.—The Yorkshire Council of the British Empire Cancer Campaign has arranged a series of three lectures, open to members of the medical profession without fee, to be given at the Medical School, Leeds, on Wednesdays, at 3.30 P.M. On March 7th an introductory address will be given by Sir Berkeley Moynihan; on April 4th Prof. G. E. Gask will speak on Radium in the Treatment of Malignant Disease; and on May 9th Prof. G. Grey Turner will speak on Cancer of the Rectum. Tea will be provided at 4.30 P.M., and practitioners who intend to be present are asked to inform the secretary of the campaign at 47, Park-square, Leeds, at least two days before each lecture.

BELFAST HOSPITAL FOR SICK CHILDREN.—The fifty-fifth annual meeting of this institution was held at the hospital on Feb. 7th. The reports showed that the work had increased largely during the year, and the financial report showed a considerable credit balance. The pressure upon the accommodation of the hospital has so far outrun the resources of the institution that a scheme of rebuilding has become an urgent necessity, and building operations will be begun in a few months. An appeal to the public for the necessary funds has met with a prompt and generous response. At the beginning of the year the rebuilding fund stood at £24,000, and at the end of the year this figure had risen to £44,000. The new hospital will be modern in every respect and will provide accommodation for 66 intern patients and a greatly enlarged extern department. It will be capable of quick and easy expansion to a hospital containing accommodation for 120 or more intern patients. The cost of the present plans will be not far short of £100,000.

Prof. J. A. Lindsay, who presided at the meeting, pointed out that hospital policy was receiving more attention and intelligent discussion at the present time than at any previous period. These discussions had emphasised three points: (1) That hospital accommodation was everywhere inadequate, that the demand for the institutional treatment of disease was steadily growing, and that hospitals ought to receive adequate financial support to enable them not only to provide the best facilities for the treatment of patients but also to further research and medical education. (2) That there ought to be more coöperation and mutual understanding between hospitals, so as, on the one hand, to prevent overlapping, and, on the other hand, to secure that the field of hospital service was adequately filled. (3) That more provision should be made for the middle classes, who provide most of the financial support for the voluntary hospitals but who have only a meagre share in their benefits.

FEDERATION OF MEDICAL AND ALLIED SERVICI
A meeting of the Council of Industrial Medicine will be
on Friday, March 2nd, at 5.30 P.M., at 12, Stratford-p
London, W. 1, to consider (1) the treatment of indu
accidents, and (2) the value of adequate treatme
industrial rheumatism.

IRISH MEDICAL SCHOOLS AND GRADUATES' ASS
TION.—This association will hold a dinner on Satu
March 17th, at 7.30 for 7.45 P.M., at the Savoy Hotel, Lo
General Sir Hubert Gough will be the principal guest.
hon. secretary is Dr. F. R. Holmes Meyrick, 59, Kensin
court, W. 8.

SOCIETY FOR THE STUDY OF INEBRIETY
meeting will be held in the rooms of the Medical Socie
London, 11, Chandos-street, Cavendish-square, London
on Tuesday, April 17th, at 4 P.M. Mr. Cecil Chapman
metropolitan police magistrate to the Westminster P
court, will open a discussion on Alcoholism and Crime

HUNTERIAN SOCIETY.—This society has
invited by the Hunterian Society of St. George's Ho
to hold a joint meeting to commemorate the bicent
of the birth of John Hunter. The meeting will be h
the board room of the hospital on Thursday, March
at 9 P.M., and will take the form of a conversazione,
addresses being delivered by Sir Humphry Rollestor
Sir Crisp English.

SOCIAL HYGIENE SUMMER SCHOOL.—The Bi
Social Hygiene Council has arranged to hold a su
school at Westminster College, Cambridge, from July
to August 2nd. The school is open to all interested in
problems, and addresses will be given, amongst othe
Dr. H. Crichton Miller, Dr. Letitia Fairfield, Mr.
Turner, Prof. Winifred Cullis, Dr. I. Feldman, Colonel
Harrison, and Dr. Margaret Rorke. Further informatio
be had from the secretary at Carteret House, Car
street, London, S.W. 1.

THE LATE DR. WILLIAM INGLIS MASON.—
William Inglis Mason, who qualified M.R.C.S. in
and L.S.A. in 1869, was a member of an old Sudbury fa
He succeeded to his father's practice, and carried
until he retired in his sixtieth year, a quarter of a ce
ago. He was the oldest living member of the Stour V
lodge of Freemasons, and the installation of the remar
organ in St. Peter's Church owed much to his initi
He leaves a widow, one son, and a daughter.

JOURNÉES MÉDICALES DE BRUXELLES.—
medical reunion has been put forward two months in
to coincide with the Floralies, a horticultural exhi
which is one of the glories of Ghent. The Journées
Tuberculose will be added to the programme. The Fl
will be opened by the Sovereign on Saturday, April
and the opening medical séance will be held on Su
morning. The fee will be 75 francs, and information
be obtained from M. le docteur Beckers, 62 rue Fro
Brussels.

THE LATE DR S. LLOYD JONES.—The dea
Dr. Lloyd Jones, superintendent of the Notts C
Mental Hospital, was not altogether unexpected. H
been in failing health for two or three years, but had c
on his duties at the hospital and as medical adviser
Mental Deficiency Committee. He had previously
medical officer at the London County Asylum,
Hatch. During the war he attained the rank of
Colonel in the R.A.M.C., and commanded the Notts C
War Hospital. He leaves a widow and three childre

GLASGOW HOSPITALS.—At the annual ge
court of contributors to the Glasgow Royal Infirmar
James Macfarlane, the chairman of the managers, anno
that it was hoped soon to begin the proposed exter
The ophthalmic and out-patients' departments are
rebuilt and an auxiliary hospital and nursing home
be provided at Canniesburn. During the past year
patients were treated, an increase of more than 130
the average cost of each patient was £7 4s. 7d. In th
patients' department more than 66,000 persons were tre
the total number treated in the institution was 8733
than in 1926. There was an adverse balance of
£13,000.—The governors of Glasgow Victoria Infi
have decided to establish a department for paying pa
at an inclusive fee of 6 guineas (see p. 412).—The a
report of the Glasgow Western Infirmary shows that
was some increase in the number of patients, and th
average cost per patient was £7 11s., being a grov
3s. 7d. The work of the X ray and electrical departm
being carried on under great difficulties owing to l
accommodation.—An appeal for £50,000 is being m
provide the nucleus of an endowment fund for the
at Largs of the East Park Home for Infirm Childr
Maryhill, Glasgow.

r. R. J. Stilwell, whose family have for over a lred years been connected with private mental hospitals liddlesex, has been made a justice of the peace for that ity.

NDUSTRIAL PSYCHOLOGY.—The National Institute ndustrial Psychology, founded in 1921, has received an ıymous gift of £4000 towards the cost of new premises. work of the institute has so much increased that larger ıises with well-equipped psychological laboratories are ıtial.

. R. WILSON MEMORIAL PRIZE.—A Sidney Rawson on Prize, of the value of £50, is offered for the best ırch work on inhalation anæsthesia carried out by a en of the British Empire before Dec. 1st, 1928. Further iculars may be had from the secretary of the *British nal of Anæsthesia*, at Ainsdale, Palatine-road, Withon, Manchester.

NDUSTRIAL HEALTH EDUCATION SOCIETY.—The ıal meeting of this Society will be held on Tuesday, 28th, at 4 P.M., at the house of the Society of Medical ers of Health, 1, Upper Montague-street, Russell-square, lon, W.C. Sir William Haldane will preside, and among peakers will be Sir Thomas Horder, Sir Thomas Oliver, Mr. Ben Turner, President of the Trades Union Council.

ECKETT HOSPITAL, BARNSLEY: NUMBER OF DENTS.—The Duke of Northumberland on Feb. 8th ed the new wing of the Beckett Hospital and Dispensary arnsley. The people of Barnsley and the neighbour- have provided over £16,000, but over £10,000 is still ired to meet the cost of the new wing and also a sum ient to bring an income of £5000 a year to endow the wing. Mr. Herbert Smith, president of the Miners' ration, furnished figures showing the demand for ital facilities. Every 2½ minutes a workman in the s was seriously injured, and over 35 per cent. of them ved hospital treatment in 1920. Out of 139,963 persons ed in factories and workshops more than 40 per cent. ht hospital relief, and also, in 1926, out of 133,885 people ved in road accidents over 55 per cent. were taken spital.

ENTRAL COUNCIL FOR DISTRICT NURSING IN DON.—The annual meeting of the Council was held eb. 23rd, when the report for 1927 was presented. report showed that there had been a gradual increase strict nursing in Middlesex. The executive committee, hich the Rev. J. Scott Lidgett is chairman, and Miss L. Puxley, vice-chairman, reported that grants to the nt of £4595 had been distributed among 49 district ng associations, and that £3000 had been received the London parochial charities, £100 from the trustees abody Donation Fund, £60 from the trustees of Guinness t for Dwellings, and £585 from the Ministry of Health. also reported on an arrangement by which the Mutual erty Insurance Co. provides free nursing services for olicy-holders, and stated that the effect of this arrange- on the district nursing associations organised on ident lines was being watched. It was announced that conference called to consider the new regulations con- ng the admission of scarlet fever and measles cases letropolitan Asylums Board hospitals, it had been d that the home nursing of scarlet fever could be rtaken with careful precautions, provided that the es were not in attendance on maternity cases.

HE LATE DR. ELIZABETH RUSSELL.—Dr. E. D. ell, who died at sea on Feb. 12th, had for the last five s lived an active professional life as assistant physician ıe Pretoria Mental Hospital, although suffering from etes mellitus. The disease was already at such an nced stage when insulin first became available that it ed scarcely possible that she would survive the journey South Africa to receive treatment in this country. results—in those early days of insulin therapy—seemed culous, and she courageously determined to continue ork, leading an insulin life, which at that time entailed from absence of standardisation. Dr. Russell not only ed on routine work, but found energy to conduct and ish, jointly with Dr. A. Pijper, important researches into athological aspects of mental disease. In her leisure rove a car and played tennis, letting her special require- s interfere little—perhaps too little—with her normal l life. "She was a lovable person," writes a medical d, "steadfast, plucky, and popular with her colleagues etoria and with her fellow students in the University of Town and at the Royal Free Hospital. Her friends will remember with pride her successful fight against adverse itions." Dr. Russell was the daughter of Mr. W. A. ell, well known in educational circles in South Africa. ntered the Royal Free Hospital in 1916 and qualified .R.C.S. Eng. in 1918, later taking the D.P.H. Her ger sister is also a member of the medical profession.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MONDAY, Feb. 27th.—8 P.M., ODONTOLOGY. Paper: Mrs. Lilian Lindsay: Dentistry as One of the Fine Arts. Casual Communication: Mr. Alvan T. Marston: A Case of Necrosis of the Mandible.

TUESDAY.—5 P.M., MEDICINE. Paper: Dr. H. L. Tidy: The Hæmorrhagic Diathesis. Members having cases to show are requested to communicate with the honorary secretaries without delay.

THURSDAY, March 1st.—8.15 P.M., TROPICAL DISEASES. Paper: Dr. Andrew Balfour: Health Lessons from Bermuda.

FRIDAY.—5 P.M., LARYNGOLOGY. (Cases at 4 P.M.) Cases and Specimens will be shown by Dr. Green, Mr. Ridout, Mr. Bell Tawse, Dr. Syme, and others. Communication: Dr. Graves and Dr. Pickworth: Sinusitis in the Ætiology of Mental Disorder. 8.30 P.M., ANÆSTHETICS, OBSTETRICS. Discussion on Anæsthesia in Obstetrics. Openers: Dr. J. Blomfield and Mr. H. A. Richards (Anæsthetics), Mr. Eardley Holland and Mr. W. Gilliatt (Obstetrics). Mr. H. Edmund G. Boyle (Anæsthetics) and Dr. Herbert R. Spencer (Obstetrics) have also promised to speak.

SATURDAY.—10.30 A.M., OTOLOGY. (Cases at 9.30 A.M.) Paper: Dr. Isadore Müller (Carlsbad): Meditations on Vertigo Based on Experience. Cases and Specimens will be shown by Dr. M. Sourasky (introduced by Mr. Kisch) and others.

HUNTERIAN SOCIETY.

MONDAY, Feb. 27th.—9 P.M. (at the London Mansion House), Dr. A. Feiling: Sciatica: Its Varieties and Treatment. (Hunterian Oration.)

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, W.

MONDAY, Feb. 27th.—8.30 P.M., Discussion on the Scope of Surgery in the Treatment of Chronic Rheumatoid and Osteo-arthritis. To be introduced by Mr. Max Page, followed by Mr. Henry Platt.

WEDNESDAY.—9 P.M., Dr. F. J. Poynton: Rheumatic Heart Disease in Childhood. (Lettsomian lectures (2).)

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS, Pall Mall East, S.W.

THURSDAY, March 1st.—5 P.M., Dr. F. A. E. Crew: Individual, Familial, and Racial Inborn Differences in Respect of Immunities and Disease Resistance. (Milroy lecture (1).)

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, Feb. 27th, to SATURDAY, March 3rd.—FELLOWSHIP OF MEDICINE LECTURE, Medical Society of London, 11, Chandos-street, Cavendish-square, W. Mon., 5 P.M., Dr. Neill Hobhouse: Amentia in Relation to Cerebral Disease and Abnormality.—ROYAL FREE HOSPITAL, Gray's Inn-road, W.C. Wed., 5 P.M., Clinical demonstration by Dr. C. B. Heald on Cases Treated by Electrotherapy.—SAMARITAN HOSPITAL FOR WOMEN, Marylebone-road, N.W. Wed., 2.30 P.M., Clinical Demonstration by Mr. Aleck Bourne. The above are free to members of the medical profession.—QUEEN MARY'S HOSPITAL FOR THE EAST END, Stratford, E. Second week of a course in medicine, surgery and the special departments—THE NATIONAL HOSPITAL, Queen-square, W.C. Special course in Neurology. Lectures, demonstrations, including pathology.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham.

MONDAY, Feb. 27th.—2.30 to 5 P.M., Medical, Surgical, and Gynæcological Clinics. Operations.

TUESDAY.—2.30 to 5 P.M., Medical, Surgical, Throat, Nose and Ear Clinics. Operations.

WEDNESDAY.—2.30 to 5 P.M., Medical, Skin, and Eye Clinics. Operations.

THURSDAY, March 1st.—11.30 A.M., Dental Clinics. 2.30 to 5 P.M., Medical, Surgical, and Ear, Nose, and Throat Clinics. Operations.

FRIDAY.—10. 30 A.M., Throat, Nose, and Ear Clinics. 2.30 to 5 P.M., Surgical, Medical, and Children's Diseases Clinics. Operations.

On Monday and Thursday at 2.30 P.M., there will also be special demonstrations of medical and surgical cases by Dr. J. B. Alexander and Mr. H. W. Carson respectively.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James's Hospital, Ouseley-road, Balham, S.W.

THURSDAY, March 1st.—4 P.M., Mr. M. S. Mayou: Some Common Disorders of the Eye in General Practice.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.
TUESDAY, Feb. 28th.—5 P.M., Dr. Wilfrid Fox: Cutaneous Syphilis (1).
THURSDAY, March 1st.—5 P.M., Dr. Wilfrid Fox: Cutaneous Syphilis (2).

NATIONAL HOSPITAL, Queen-square, Bloomsbury.
MONDAY, Feb. 27th.—2 P.M., Dr. Hinds Howell: Out-patient Clinic. 3,30 P.M., Dr. Riddoch: Trigeminal Neuralgia.
TUESDAY.—2 P.M., Dr. Walshe: Out-patient Clinic. 3.30 P.M., Dr. Bernard Hart: The Psychoneuroses (1).
THURSDAY, March 1st.—2 P.M., Dr. Kinnier Wilson: Out-patient Clinic. 3.30 P.M., Dr. Gordon Holmes: Pituitary Tumours (2).
FRIDAY.—2 P.M., Dr. Adie: Out-patient Clinic. 3.30 P.M., Dr. Symonds: Cerebral Abscess.

HOSPITAL FOR SICK CHILDREN, Great Ormond-st., W.C.
THURSDAY, March 1st.—4 P.M., Mr. H. A. T. Fairbank: Surgical Treatment of Poliomyelitis.

ROYAL NORTHERN HOSPITAL, Holloway-road, N.
TUESDAY, Feb. 28th.—3.15 P.M. (at the Royal Chest Hospital), Dr. H. E. Symes-Thompson: Intra-Thoracic Tuberculosis in Childhood.

ST. PAUL'S HOSPITAL, Endell-street, W.C.
THURSDAY, March 1st.—4.30 P.M., Dr. David Thomson: Common Infection of the Genito-Urinary Tracts.

ROYAL INSTITUTE OF PUBLIC HEALTH, 37, Russell-square, W.C.
WEDNESDAY, Feb. 29th.—4.30 P.M., Sir Robert Armstrong-Jones: Present Legal Aspects of the Treatment of the Insane and the Mentally Defective.

PEOPLE'S LEAGUE OF HEALTH.
WEDNESDAY, Feb. 29th.—6 P.M. (at the Medical Society's Rooms, 11, Chandos-street, Cavendish-square, W.), Dr. E. Mapother: Mind and Body.
THURSDAY, March 1st.—6 P.M., Dr. Leslie J. Harris: Vitamins, Their Significance for the Man in the Street.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE COURSE.
FRIDAY, March 2nd.—4.15 P.M., Dr. A. H. Holmes: Demonstration of Medical Cases.

ST. MARY'S HOSPITALS, MANCHESTER.
FRIDAY, March 2nd.—4.30 P.M., post-graduate lecture (at the Whitworth-street West Branch), Dr. Addis: Breech Presentations.

UNIVERSITY OF SHEFFIELD POST-GRADUATE CLINICS.
FRIDAY, March 2nd.—3.30 P.M. (in the Royal Infirmary), Dr Hallam: Dermatological Cases.

Appointments.

EDWARDS, N. L., M.B., Ch.B. Manch., F.R.C.S. Eng., has been appointed Hon. Gynæcological Surgeon, Derby Royal Infirmary.

LLEWELLIN, DOROTHY M., L.R.C.P. Lond., M.R.C.S., Assistant Medical Officer of Health and Assistant Schools' Medical Officer, Mountain Ash District.

Manchester Royal Infirmary: HOLT, R. L., F.R.C.S. Eng., Assistant Resident Surgical Officer; WALKER, G. R., M.B., Ch.B. Manch.; ABRAHAM, R. S., M.B., Ch.B. Manch.; MARTIN, H. E., M.B., Ch.B. Manch., and CRETNEY, E., M.B., Ch.B. Manch., House Physicians; NUTTALL, J. R., M.B., Ch.B. Manch., APPLETON, S. K., M.B., Ch.B. Manch., WARD, E., M.R.C.S., L.R.C.P. Lond., SYKES, C. E., M.B., Ch.B, Manch., WATKINS, H. K., M.B., Ch.B. Manch., and ROBINSON, M., M.B., Ch.B. Manch., House Surgeons; KAUFMANN, Miss P. I., M.B., Ch.B. Manch., Junior Assistant House Surgeon; TAYLOR, S. N., M.B., Ch.B. Manch., Resident Medical Officer, Barnes Convalescent Hospital, Cheadle; SOMERFORD, A. R., M.B., Ch.B. Manch., Assistant Medical Officer (non-resident), Out-patients' Department; MARSHALL, Miss, M.B., Ch.B. Manch., Clinical Assistant (non-resident), Surgical Out-patients' Department; ROBERTS, R. I., M.R.C.S., L.R.C.P. Lond., Second Surgical Registrar (non-resident).

Certifying Surgeons under the Factory and Workshop Acts: GORDON, G. S., M.B., B.Ch. Glasg. (Kilwenning, Ayr); HICK, R. H. P., L.R.C.P. Lond., M.R.C.S. (Bracknell, Berks); HETHERINGTON, W. M., M.B., Ch.B. Edin. (Wetheral, Cumberland); MATHEWS, R. G., B.M., B.Ch. Oxf. (Kirby Lonsdale, Westmorland); STEPHEN, N. M., M.B., Ch.B. Edin. (Peasenhall, Suffolk).

Vacancies.

For further information refer to the advertisement columns.

Bradford, Municipal General Hospital, St. Luke's.—H.P.'s and H.S.'s. Each at rate of £200.

Bristol City and County of.—Chief Asst. M.O.H., &c. £800. Also Asst. M.O.H. £750.

Burton, Devonshire Hospital.—Asst. H.P. At rate of £150.

Central London Throat, Nose, and Ear Hospital, Gray's Inn-road, W.C.—Res. H.S. At rate of £75.

Eastbourne, Princess Alice Hospital.—Jun. Res. H.S. At rate of £100.

East Islington Mothers' and Babies' Welfare Centre, 10, Drayton Park, N.—M.O.

Great Yarmouth General Hospital.—H.S. £150.

Grove Park Hospital, Lee, S.E.—Jun. Asst. M.O. £500.

Hertford County Hospital.—Res. Surg. O. £250. Also At rate of £150. Also Hon. Anæsthetist.

Hospital for Consumption and Diseases of Chest, Brompto—Res. M.O. £350.

Hospital for Sick Children, Great Ormond-street, W.C.—Pathologist and Research Fellow. £450. Also Jun. O. (part-time). At rate of £75.

King's College Hospital, Denmark Hill, S.E.—Two Jun. Surg

Leamington Spa, Warneford General Hospital.—Res. H.S.

Leeds University, Safety in Mines Research Board.—Physiol £300.

Leicestershire County Council.—Asst. M.O.H., &c. £600.

Lincoln, City and County Borough of.—M.O.H. £1000.

Liphook, Hants, King George's Sanatorium for Sailors.—M.O. At rate of £200.

London County Council.—Temp. Asst. M.O. 30s. per sessio

London Temperance Hospital, Hampstead-road, N.W.—M.O. At rate of £175.

Manchester Ear Hospital, Grosvenor-square, All Saints.—H.S.'s. At rate of £150 and £120.

Manchester Royal Children's Hospital, Pendlebury.—Surg. O. and Res. M.O. Each at rate of £125.

Manchester Royal Children's Hospital, Gartside-street.—M.O. At rate of £140.

Miller General Hospital for South-East London, Greenwich-S.E.—Hon. P. to Special Dept. for Children. Also M.O. At rate of £250,. Also H.P. At rate of £125.

Northampton General Hospital.—H.P., two H.S.'s and Asst. H.S.'s. Each at rate of £150.

Nottingham and Midland Eye Infirmary.—H.S. £200.

Nottingham General Hospital.—H.S. At rate of £150.

Perth, James Murray's Royal Asylum.—Asst. Phys. £300.

Plymouth, Homœopathic and General Hospital.—H.S. At of £100.

Radcliffe-on-Trent, Notts County Mental Hospital.—Med. £1000.

Royal Waterloo Hospital for Children and Women, Wat road, S.E.—Hon. Med. Reg.

St. George's Hospital Medical School, Hyde Park Corner, S.—Research Worker. £500.

St. Mary Abbots Hospital, Marloes-road, Kensington, Asst. Med. Supt. £450.

St. Peter's Hospital for Stone, &c., Henrietta-street, Garden, W.C.—H.S. At rate of £75.

Salisbury General Infirmary.—H.S. £150.

Samaritan Free Hospital for Women, Marylebone-road, N.—H.S. At rate of £100.

Smethwick County Borough.—Pupil Assistant.

Southampton, Royal South Hants and Southampton Hospit—Cas. O. £120.

Stoke-on-Trent, City of.—M.O. of Venereal Dis. Centres.

Torquay, Torbay Hospital.—Hon. Med. O. for Ear, Nose Throat Dep.

West London Hospital, Hammersmith, W.—H.P. and two H. Each at rate of £100. Hon. Med. Reg. £100. Also Anæsthetist.

Whipps Cross Hospital, Whipps Cross-road, Leytonstone, Asst. M.O. £300.

Willesden Municipal Hospital, Brentfield-road, Neasden, N.—Res. M.O. £150.

Worksop, Victoria Hospital.—H.S. At rate of £170.

A vacancy for Certifying Factory Surgeon is announce Sutton-in-Ashfield (Nottinghamshire).

The Secretary of State for the Home Department gives n of a vacancy for a Medical Referee under the Work Compensation Act for the Orkney District (Sheriffdo Caithness, Orkney and Shetland). Applications sh reach the Private Secretary, Scottish Office, Whit London, not later than March 14th.

Births, Marriages, and Deat

BIRTHS.

BERRY.—On Feb. 17th, at Glenthorne, Watford, the wi Dr. H. Berry, of a son.

HAYDON.—On Feb. 18th, at Melton Mowbray, the wi Leonard John Haydon, M.R.C.S., of a daughter.

JONES.—On Feb. 13th, at Deddington, Oxon., the wif George Horatio Jones, M.R.C.S., of a son.

NEAME.—On Feb. 13th, at Portland-place, W., the wif Humphrey Neame, F.R.C.S., of a son.

ROSE.—On Feb. 10th, at Lansdowne House, Romsey, H the wife of Edward S. Rose, M.R.C.S., of a son.

WILSON.—On Feb. 18th, at Moselle House, High-road, To ham, N., the wife of Archibald Wilson, O.B.E., M.C., Ch.B., of a daughter.

DEATHS.

GUTHRIE.—On Feb. 18th, at The Crossways, Tunbridge W Thomas Clement, M.D., M.R.C.S., aged 60.

JEPSON.—On Feb. 12th, at Palliser-road, W., Victor B Jepson, M.R.C.S., L.R.C.P., aged 59.

PHILLIPS.—On Feb. 11th, at Twyford Abbey, London, Surg Captain John Elphinstone Hood Phillips, R.N. (retd.).

POCKETT.—On Feb. 18th, 1928, at 259, Hainton-ave Grimsby, Lewis Walter Pockett, M.D., F.R.C.S., L.R. L.S.A. Cremated Golders Green, Wednesday, Feb. 2

SHEPERD.—On Feb. 15th, at "Stradbally," Lansdown Cheltenham, Robert John Sheperd, L.R.C.P., L.R. aged 76.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notic Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

CARE OF THE SCHOOL-CHILD.

IN an address on child guidance delivered before the ld Study Society on Feb. 16th Sir Humphry Rolleston d that the word "education," which connoted preparation future life, should be used to include the development of h physical and mental capacities, for these were closely er-related, and must be wisely balanced. The difficulty arranging the routine of school-life was that children differed in their individual capacities, whilst from the nt of view of the school it was necessary that there should a uniform and systematic plan, and individual license st be comparatively small. The necessary limitations the school had to be compensated for by the freedom he holidays, and the urgent need for these holidays was en shown by the way in which children flagged in the nd half of the term. During adolescence there was an erse ratio between physical growth and mental efficiency, when a child was growing rapidly its mind did not p pace. Schoolmasters often reported about the age of erty that a child was fidgety, inattentive, and could do h better; but if a boy was not doing well, the fact ld be accepted philosophically by the parents as an cation that he was growing, and not as a sign of vice. s did not develop at the same rate, and the rate at which blossomed out was no assurance of how long they would inue to bear fruit. It was important to remember that young, however callous and defiant they might appear, really extremely sensitive and impressionable, and r self-respect and spirit were often worn down by depre- ry comparisons, and by the constant snubs of school- ters and parents. There was always a tendency to up to the character one was given, and sympathy and erstanding was seldom wasted upon backward children. was a serious matter, continued Sir Humphry, to curtail necessary hours of sleep of growing boys and girls, these should be 11 hours for a child up to the age of years, and 9½ hours up to the age of 17, both these ma being increased during the winter months. Insuffi- cy of sleep, tantamount to overwork, favoured mental ability and rendered a child liable to the inroads of ase. The young, clever boy who was high in the school his years, ought to sleep in a dormitory for boys of his age. Better results had also been obtained in the er of winning scholarships by reducing the amount me that boys were supposed to be working; the character he work done and the health of the pupils were also oved by prolonging the rest periods between the hours ork. As far as possible all out-of-school work should be ded, and punishments which involved keeping children he school-room were quite wrong. Discipline had to be tained, and he considered that corporal punishment a perfectly right correction so long as a master, before ting it, made full inquiries; the immediate boxing of and twisting of arms should, of course, be abolished. fact that children developed at different rates made question of over-pressure and over-work in schools a ult one. The effects of over-pressure of the brain more important than the effects of over-pressure of the , and whereas it was difficult to over-strain a perfectly hy child by physical exercise, there was much less ve power in the nervous system.

the subsequent discussion Dr. Letitia Fairfield said that ngland she thought it extremely rare to see cases of over- in a child, and they were usually associated with some ional disturbance outside school life. It was interesting te how retardation at school might spring from remote ional causes. In America, however, things were different. the beginning of their school lives children brought reports to their parents which were taken extremely usly, and promotion in the schools was automatic, a remaining behind being in disgrace. The gay little er of our schools who did not want to learn was severely ng in American schools.

"METALIX" X RAY TUBES.

have received from Philips Lamp, Ltd. (145, Charing -road, London, W.C. 2), an illustrated brochure showing arious types of "Metalix" X ray tubes which are now able. A remarkable feature of the brochure is that it illustrations of X ray apparatus by a number of ent manufacturers. From their design "Metalix" facilitate protection to the operator, an advantage ich manufacturers have not been slow to avail them- s. The benefit is shared by the purchaser, for the of putting heavy protective material on moving parts neant a big outlay. The time since the introduction ese tubes may be too short to pass any final verdict eir lasting qualities, but extended use by medical men sts that they are coming up to expectations.

THE INFLUENCE OF PROSPERITY ON HEALTH.

AT a meeting of the Royal Statistical Society on Feb. 21st Dr. T. H. C. Stevenson, of the General Register Office, read a paper on Vital Statistics of Wealth and Poverty. Many attempts, he said, have been made to estimate the influence upon health of prosperity and the lack of it, but the extent of our ignorance of the subject attests the difficulties of its investigation. The method most commonly employed has been the comparison of returns for complete populations selected as representing wealth and poverty. But the samples so secured are very far from pure, or free from influence by other factors than that under investigation. If the contrasts in wealth, and, what is probably quite as important in its influence on health, culture, are to be obvious, the numbers available for examination will be limited; and on the other hand, if the field of investigation is extended the difficulty of assessing degree of local wealth and culture becomes formidable. Classification of individuals by income is not possible under present conditions in this country, though it has been employed on a very limited scale in some American investigations. Estimation of poverty by housing conditions is very unsatisfactory, as bad housing is only one of the handicaps of poverty, so that it is impossible to determine how far the excess of mortality associated with bad housing is due to poverty and how far to the direct effects of overcrowding and other factors.

Even if full details of income were available, these in themselves would not provide an ideal basis of classification, as it is probably rather the cultural associations of wealth which promote longevity than wealth itself. The clergy are, for the most part, poorly paid, but they are singularly healthy. The method which Dr. Stevenson advocated as on the whole best meeting the conditions to be considered is that of inferring social position from occupation. By this means regard can be paid to (average) culture as well as income, and the total occupied population can be included in the inquiry. The results attained by a scheme based on these lines are described in the recent report of the Registrar-General on Occupational Mortality during 1921–23, and the regularity and consistency of the graduation so obtained of mortality from various causes is held to be in itself evidence of the success of the social classification so arrived at. Dr. Stevenson quoted instances of such regularity, mortality from many forms of disease increasing without interruption from a minimum in the highest to a maximum in the lowest social class. Respiratory diseases, including phthisis, furnish, he said, the most pronounced examples of this type of distribution, which tends to be reversed for diseases of the digestive system, and for diabetes in later life, mortality from appendicitis increasing without interruption from a minimum for the lowest to a maximum for the highest of the five social classes distinguished. The case of cancer is especially interesting. Mortality from this cause follows the usual type of social distribution, being lowest in the highest, and highest in the lowest, section of society. But this gradation is found to apply to cancer of certain sites only, mortality from the remainder being much the same for all classes. The graded sites, which are responsible for about half the total deaths (in males, for whom alone the requisite occupational information is available), includes the upper alimentary canal from mouth to stomach inclusive, the skin, and the larynx. It would therefore appear that cancer of these sites is largely preventable, though the factors determining its differential incidence will have first to be recognised.

In conclusion Dr. Stevenson suggested certain further uses for a social classification based on occupation, including investigation of the tendency of various sections of society to increase or decrease and be replaced by others.

RECIPES FOR LIVER DIET.

THE fact that those undergoing liver regimen have to eat large quantities of the food makes it imperative that as much variety as possible should be found in the ways of serving it. We have already referred to a collection of Irish recipes [1] and a booklet has now reached us entitled "Liver: Nutritive Value and Ways of Serving" (Department of Home Economics, Institute of American Meat Packers, 509, South Wabash-avenue, Chicago), which contains 40 American recipes for serving this article of food, adapted to the three principal meals of the day, all of which can be used in the home, and most of which are applicable to hospitals and institutional dietaries. Two examples may be given; the first is for baked liver, Swedish style, the second for stuffed cabbage leaves:—

Ingredients.—1½ lb. beef liver; flour to dredge; salt, pepper; 1 cup cream or milk; 2 apples, sliced; 6 prunes, cooked and stoned; 2 tablespoons butter; 3 slices bacon. *Method.*—Select a thick piece of liver. Soak over night or for several hours in a marinade dressing or in buttermilk. Cut liver on thick side to form a pocket, sprinkle cavity with salt and pepper, then fill with fruit and broken bits of butter. Sew or skewer

[1] THE LANCET, Jan. 14th, p. 113.

liver together. Make several cuts about ¼ inch deep on outer top surface of liver, dredge with flour, wrap with strips of bacon, and skewer into place. Put in a baking dish, add ½ cup water, and bake 2 hours in a moderate oven (325° F.), basting occasionally. When done, place liver on a platter and garnish. Thicken liquid in pan, add cream or milk and seasonings, and serve with meat.

Ingredients.—1 cup liver, chopped or ground; 2 tablespoons bacon fat; 1 cup tomato juice or stock; 1 cup cooked rice; 1 beaten egg; ½ teaspoon celery salt; 1 teaspoon salt; dash of nutmeg or cinnamon; 1 small onion, minced; 10 to 12 cabbage leaves. *Method.*—Remove the outer leaves of a cabbage head, wash, then cover with boiling water and cook for 3 to 5 minutes, or until the leaves begin to look transparent. Combine the liver, rice, beaten egg, bread crumbs, 1 tablespoon each of bacon fat and onion, and seasonings. Mix thoroughly. Remove cabbage leaves from water, drain, and on each leaf place a large tablespoonful of the liver mixture. Roll and fold each cabbage leaf, and then tie with string or fasten with toothpick. Melt rest of bacon fat in a deep frying pan, brown slightly the rest of the onion and lay on it the filled cabbage leaves. Pour over them the stock or tomato juice, cover, and cook slowly over a low fire 1 hour or bake in a moderate oven (375° F.) 45 minutes. If fat is limited in the diet, omit it in the recipe and scant the amount used for browning.

MIDDLE-AGED SPRINTING.

Dr. F. E. Fremantle, M.P., has an interesting note in a recent issue of the *Journal* of the London Athletic Club upon the health value of running as a recreation. He describes the cross-country runs which he and his contemporaries at Guy's Hospital took regularly, and he gives it as his experience that all the men sufficiently fit to undertake these runs benefited much by them, although he allows that the physical strain was exacting when the arduous life of the medical student had to be conducted at the same time. Contemplation of the breakdown of friends in middle life leads him to the reflection that they might have kept their health if they had learned early the value of cross-country running, indulged in it reasonably and practised it, or some analogous exercise, throughout life. The value of a daily sprint of a hundred yards is alluded to as keeping the heart trim and the circulation in good order, but we are sure that he would recommend those of his middle-aged friends who have already begun to show signs of circulatory trouble to avoid this particular form of exercise whenever possible—never, in short, to run for a train.

NEW PREPARATIONS.

WE have received samples of *Tricalcine* from the laboratory of Dr. Perraudin in Paris (Agent: Wilcox, Jozeau et Cie, Great St. Andrew-street, London). The drug has been designed to supply certain mineral elements necessary to human alimentation when deficiency is diagnosed, particularly if it can be traced to faulty dietetic methods. The calcium preparation is supplied pure or in association with adrenalin, with methylarsenate of soda, or with fluoride of calcium, according to the condition for which the recalcifying treatment is made. Great claims are made for the remedy in assisting the normal formation of and subsequently in preserving the teeth, and there would seem to be many conditions in which an intelligent trial of the preparation might be made.

Hæmatopan.—This drug is prepared in the laboratory of Dr. A. Wolff, of Bielefeld (Agent: Mr. James Wandrum, Stow-street, Paisley), and is a combination of hæmoglobin and malt. It has, we believe, been procurable for over 20 years, but recently a good many reports of its beneficial effects in malnutrition have been received, with the result that an increased interest in the preparation is being manifested. Various combinations of hæmatopan with a small percentage of arsenic, with potassium bromide, calcium lactate, guaiacol, colloidal silica, and iodine are also prepared in accordance with the indications of the case.

Radiostol, which is now prepared by British Drug Houses, Ltd. (Graham-street, City-road, London), is an irradiated ergosterol and should be of service in making good dietetic deficiencies, especially in cases of rickets. It is prepared in bottles of 50 tablets, each tablet containing an exact quantity of radiostol, while it is claimed that the original vitamin D content is maintained. The radio-ergosterol is also issued in solution where the antirachitic activity is estimated at 50 times that of cod-liver oil. The preparation is clearly one upon which systematic reports might be made with profit.

We have received from Messrs. Coates and Cooper, of Great Tower-street, London, acting as agents for Messrs. Reed and Carnrick, of Jersey City, U.S.A., samples of *Peptenzyme* in what is termed "elixir form." The preparation is designed to be used as a vehicle for noxious and distasteful drugs with which it is usually readily miscible. It is neutral in reaction, low in alcoholic content, and is stated, as its title conveys, to contain certain enzymes valuable in digestion.

A HOSPITAL PHARMACOPŒIA.

THE Pharmacopœia of the Paddington Green Child Hospital, revised last December, has been reissued as a volume of 19 interleaved pages. Formularies of this reflect more or less faithfully the accumulated tradi of a serviceable routine. The detached reader pickin the volume before us may pardonably query such not happy pieces of latinity as Collyrium Borozinci and P Rhei cum Sodio, and may wonder what is designate Oleum Dulce; but in all probability such cruxes do exist for members of the hospital staff. The book is con hensive in its scope, particularly as to its lotions, mixt and ointments; it will be helpful if in future edition age for which the dose of each internal medicine is presc is indicated.

CHILDREN'S DECORATIONS FOR CHILDREN WARDS.

THE *World's Health* (the organ of the League of Cross Societies) for February tells us that the childr New York schools (ages 10–14) were asked to sen sketches of the pictures they would like to look at if were sick in hospital wards. Generally they favo illustrations of fairy tales or nursery rhymes. A thousand exhibited and 500 were selected as remarkable for c tones, mastery of design, and appeal to the imagin These will be used in the children's wards of the new m centre which is a-building in New York, and shou completed this year.

PROTEIN TREATMENT OF DRUG-ADDICTIO

WITH reference to an annotation with the above published in our last week's issue (p. 350), Dr. Stanford informs us that he referred to the treatment of drug-add with endocrine extracts in the annual report for Bay M Home for 1925, and has since been making experiment the method. The low blood pressure invariably fou drug patients, he says, and other symptoms sugg endocrine insufficiency, suggested the use of orchitic suprarenal extracts, and he has found them of consid value in maintaining the strength and tone of his pat Similar improvement has been noticed in a certain ty sufferer from alcoholism.

ALKALI RESERVE AND THE COMMON COL

"DYSPEPTIC" writes: I read with great interes paragraph on the common cold from your Ame correspondent last week (p. 370). I have been en free from colds for a great many years, but have suffer about the same length of time from a form of indig for which large doses of various alkalis have been presc Whether the theory put forth by Dr. Cheney is acce or not, I am prepared to be consoled by the though this continued treatment of the persistent digestive t is keeping at bay the common cold in my own case.

TWO USEFUL CONVALESCENT HOMES.

Catisfield House, Brighton.—The Catisfield Estate bequeathed by Miss Rose Greene to establish a convale home for gentlewomen of limited means, especiall those leaving hospital after an operation or acute i The home is run on the lines of a first-rate convale home, and when necessary, medical attendance and me are provided free of charge. There is accommodatio seven patients, and a charge of from 30*s.* to £2 a hea week is made, as the endowment is insufficient to pa whole expense of upkeep. The home has only been two years, but when it is better known it should cer be always full. Patients suffering from phthisis, cancer, infectious diseases, mental trouble, or drug are not admitted. Full particulars may be had fro Matron, Catisfield House, Sillwood-road, Brighton.

The Frederick Andrew Convalescent Home, West M is run on the lines of a private house in the country, to are admitted for three weeks at a time gentlewome require convalescence after recent illness or ope The stipulation is that they should be such as have t their own living. No charge is made for admissio patients pay their own laundry and telephone ch There is accommodation for 15 patients, each in a se bedroom. The home is not a holiday resort, but is int to assist poor educated women to get back to the earning ranks after illness. The following cas inadmissible: neurasthenia, infectious cases, c cases, cases requiring special dietary, surgical dressi those suffering from any illness of an objectionable Patients must be capable of dressing themselves, of about without help, and of attending meals in the room. Full particulars may be obtained from the m Miss N. S. Townshend, A.R.R.C., the Manor House Malling, Kent.

Arris and Gale Lecture*

ON THE

PHYSIOLOGY OF VIOLENT EXERCISE

IN RELATION TO THE

POSSIBILITY OF STRAIN.

BY ADOLPHE ABRAHAMS, M.D. CAMB.,
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THE capacity of a human being to undertake feats of exertion and of endurance makes an appeal to different classes from varying angles. On the mechanical side there are anatomical and dynamical problems of absorbing interest. To the physiologist the subject is one of infinite possibilities for research, whether on the lines of neurology, of cardio-respiration, or the more subtle mysteries of biochemistry. To the clinician, inclined naturally to view the body less as a complexity of systems than as a medium for pathological opportunities, there is ever before him the possibility of strain or over-stress; and a solicitude, in the exercise of his profession, to utilise his authority in the prohibition of such activities as are likely to produce temporary or permanent injury. The average non-technical man is eager to dwell upon the remarkable capabilities of his body without any particular interest in the scientific principles comprised. He sees a machine which can propel itself unaided over the ground at the rate of nearly 25 miles an hour; which, represented by a Marathon runner, can progress for nearly three hours at the rate of ten miles an hour independently of fuel save that supplied by its own tissues and exhibiting no greater sign of injury than a few blisters on the feet—scratching off the paint of the machine; which, represented by a Channel swimmer, finds cold, hunger, and fatigue almost equally indifferent in comparison with the boredom of monotony. He sees a machine which is capable of feats of endurance not so exactly definable but more remarkable when exemplified by Arctic explorers, besieged garrisons, shipwrecked mariners, and the like. His interest in physiological research into his doings is strictly utilitarian. Can the physiologist discover something which will enable him to knock off a vital fifth of a second from his time on the track? Occasionally the physiologist thinks he can, as in the presidential address to the Physiological Section of the British Association in 1925, when Prof. A. V. Hill, in "The Physiological Basis of Athletic Records," was equally happy in his title and its interpretation.

It will be my task in this lecture to try to examine the subject inductively as a student of elementary physiology, and deductively as a student of clinical medicine. In any such inquiry—and this is by no means the first of its kind—it is generally evident that one or other qualification in the inquirer has dominated. An enthusiastic athlete may be reluctant to admit the existence of any fault or danger in a favourite exercise which the physician, unduly impressed perhaps by his acquaintance with disease, is too prone to expect or recognise. It may be a handicap sometimes to have more qualifications than one for judging a given subject.

In an appeal to authorities the conscientious inquirer into the effects of violent exercise is bewildered by discrepancies and contradictions. He learns from one source that exercise causes dilatation of the heart, from another that the heart is actually smaller after exercise than before. He is prepared for the information that the temperature of the body rises as the result of exertion, and yet he is alternatively informed that researches upon Marathon runners have shown that their temperatures were subnormal. No less an authority than Osler says that the blood pressure is greatly increased; a series of accurate observations by modern apparatus proves that it is lowered. The pathology of violent exercise is certified by the occurrence of albuminuria; physicians with special experience say that this is a negligible physiological circumstance. Such contradictions may well induce despair and impatience, until it is made clear that both sides are right, if only all the facts and circumstances are known.

I have no intention of demarcating the scope of my subject and defining where moderate exercise leaves off and violent exercise begins. An easy feat of exertion for one person may be reasonably regarded as moderate for another, and even described as violent for a third. I shall in general be dealing with exercise which approaches the limit of human possibility, and it is a necessary if arbitrary assumption that the human material in question is perfectly healthy.

THE CONSUMPTION OF OXYGEN.

Although oxygen is essential for the vitality of mammalian muscle, muscular contraction is anaerobic. It is pertinent to contrast the work of a muscle with that of a combustion engine. In the latter, oxidation precedes work; in a muscle, work precedes oxidation. The muscle may be regarded as a storage battery working on energy previously stored; and when exercise is over that energy has to be restored by the consumption of oxygen. The anaerobic contraction breaks down sugar into lactic acid, which has during the recovery process to be oxidised into carbon dioxide or converted into sugar and glycogen. The amount of oxygen consumed in the recovery process is a criterion of the degree of activity of the muscle; it is directly proportionate to the accumulated lactic acid. During rest the intake of oxygen is about 250 c.cm. per minute; during the most violent exercise a maximum of about 4 litres per minute may be consumed. In one isolated experiment an extreme consumption of 4·4 litres was observed. If the exercise taken is of such severity that the lactic acid produced by the muscles is no more than can be removed simultaneously by the influence of oxidation at the rate of 4 litres of oxygen per minute, fatigue will not occur until other factors of exhaustion enter into the problem. But when really violent exercise is taken the generation of lactic acid is enormously increased. For example, in the case of a sprinter running 100 yards in ten seconds, 40 g. of lactic acid accumulate in ten seconds, 1 g. for every stride taken, and this will require 6·7 litres for oxidation. The maximum oxygen intake during ten seconds is less than a litre, and most sprinters do not breathe at all throughout a 100 yards race, since immobilisation of the thorax is an aid to locomotion.

The 6·7 litres subsequently used for oxidation is what Prof. A. V. Hill aptly calls the "oxygen debt." When more prolonged exercise is taken, the oxygen used during respiration may, in this phraseology, be regarded as income; the oxygen debt run up is borrowed on the security of the lactic acid. So long as the security remains adequate, by so much may the expenditure of oxygen exceed income. The absolute limit, the largest oxygen debt possible in the case of the finest trained athlete, is 20 litres, corresponding to about 120 g. of lactic acid, which is an enormous saturation for a muscle to endure.

From these considerations it is fairly obvious that the natural capacity for athleticism depends upon a number of factors. A man may fail to be a good runner because his oxygen intake is small, or because his oxygen requirement is high, or because his credit as regards incurring an oxygen debt is poor. His oxygen requirement may be extravagant because his movements are wasteful, a fault which training may eradicate or reduce. It has even been shown by A. V. Hill that the impairment of movement occasioned by a blister on the foot causes a considerable increase in the oxygen requirement. His security as regards oxygen debt is partly constitutional and partly the result of training, for it depends on the capacity

* Delivered at the Royal College of Surgeons of England on Feb. 13th, 1928.

of the muscle to neutralise fatigue products or to tolerate their presence, and also upon the willingness of the individual to push himself to the degree of exhaustion. The subject of oxygen intake is not without its complexity, for it includes the factor of coefficient of utilisation, a problematical increased ability of certain muscles to take up oxygen from the blood. The essential feature, however, is the "minute volume" of the heart—i.e., the amount of blood circulating per minute. For an athlete to ensure the maximum oxygen intake of 4 litres per minute, a blood flow of 37·6 litres, or approximately 8 gallons, per minute is required. To produce this enormous volume two factors are involved—output per beat and frequency of the cardiac rate.

Cardiac Frequency.

At the beginning of exercise and, in fact, in anticipation of it, especially if there are emotional accompaniments, a simultaneous tuning-up of parts of the nervous system as a psychical process leads to increased frequency and depth of breathing, increased cardiac rate, and increased blood-supply to the body as a whole and particularly to the muscles and the brain. Acceleration of the heart at the beginning of exercise is mainly due to loss of vagal tone, and partly to an increase in accelerator tone. Loss of vagal tone is characteristic of shortening of diastole; stimulation of the accelerators influences systole as well as diastole. These initial changes provide increased oxygen before other mechanisms come into action. Continuance of increased cardiac frequency is in part determined by a continuance of impulses from the higher centres to the medullary centres, in part by the increase of adrenalin in the blood stream, in part by rise of temperature, and in part by increased venous pressure. The last was shown by Bainbridge to be the most important of all. Any rise of pressure in the auricles, or accumulation of blood in the great veins, leads to diastolic distension which reflexly decreases the tone of the vagus centre.

In the meantime, respiratory movements play their part in contributing to circulatory efficiency. The increased capacity of the thorax opens up the thin-walled veins, so that blood is aspirated towards them from the extrathoracic venous system and passes more readily from the right to the left heart. During expiration, compression of the veins expels blood into the left ventricle and so into the arteries. The respiratory movements clearly accelerate the blood flow and raise the arterial pressure. That there must be a considerable difference in the contractile power of the cardiac fibres, with a corresponding difference in the output per beat, is indicated by the observation that the maximum cardiac rate during exercise is much the same whatever the capacity for exertion. This maximum is generally accepted as 168 beats per minute, though I have noted a rate of 192 on a few occasions. With moderate exercise the comparatively untrained person can accelerate sufficiently to compensate for a relatively poor output per beat, but this adjustment is limited and distress is inevitable in extreme exertion. It is frequently forgotten that the rapid contractions of a vast number of muscles have an important accessory pumping action in pressing blood onward by the valves of the veins, an action which in Bainbridge's opinion may be equal to, or transcend in, importance that of the heart itself. This affords an explanation of the severity of rowing compared with running. In the former the movements of the body are not rapid enough to give this assistance to the heart.

Blood-supply of the Heart.

Exertion entails a large increase in consumption of oxygen by the heart's own muscle. It has been calculated that at least 125 c.cm. per minute may be consumed—half that required by the whole body at rest—so that the blood-supply to the heart must be one of the decisive factors which determine capacity for muscular work. Skeletal muscle can tolerate a considerable quantity of lactic acid in the absence of adequate oxygen, but this privilege of "runni into debt" would clearly be highly dangerous the heart, which must be protected against exhausti itself beyond recovery. Hence the heart's output once diminishes when its oxygen-supply becon inadequate, and it will be readily understood that coronary blood-supply of the highest efficiency imperative.

Dilatation of the Heart.

Much misconception exists on the nature of dila tion of the heart, and the ill-effects of violent exerc which it is supposed to reflect. Dilatation is a phys logical process; it is an essential part of t mechanism by which the heart can increase or ma tain its output. Starling's law of the heart postula that the energy of contraction by which all mus substance is always measured is a function of t length of the muscle-fibre. The greater the volu of the heart, within physiological limits, the grea the energy with which it contracts. The heart, th dilates in order to increase its output in direct respo to a larger venous inflow. Dilatation increases c tractile power and so output per beat, and a co paratively slight dilatation enables the heart empty itself completely at each beat. Yet, althou the law of the heart is a constant, the actual contract power of the heart must vary with the character the fibre itself. A heart with musculature of super contractility need not dilate under stress in attempt to increase its contractile power to t same extent as one with inferior muscle. A thi walled, compact heart with an increased number fibres (to say nothing of a hypothetical superior of material) must constitute a more efficient pu than a less well-developed heart. It is the failure correlate these views with clinical observations wh has led to discrepancies, contradictions, and entir erroneous statements.

Size and Efficiency of the Heart.

The size of the heart is not so absolute as so observers would have one to suppose. It bears relation to the age, stature, and build, and an ap rently large heart may be normally commensur with the general musculature of a well-develo man. Furthermore, the influence of such factors alcoholism, in men accustomed to certain forms exertion, has to be discounted. Secondly, the meth of estimating size by percussion involves the perso factor too largely for absolute accuracy to be possib and even in radiology the personal factor is not be ignored, to say nothing of technical difficulti That some dilatation of the heart occurs dur exercise is certain; as we have seen, it is phys logical. But to assert that permanent enlargeme whether pathological or not, occurs is anot matter. Physiological dilatation disappears imm diately upon the cessation of exercise, a fact which depends the chief value of radioscopy in t investigation, and one which demonstrates t unreliability of evidence derived from percussi To obtain the absolute size of the heart, tele-rad graphy under the best conditions is almost if quite indispensable. Even so it is desirable to ins tute special refinements to be sure that, although increase in the horizontal direction is observab any antero-posterior increase may be detected. all the athletes I have examined with the skill coöperation of Dr. H. Courtney Gage, not one h exhibited any suggestion of a heart larger than th proportionate to his height and build. In fact, t surprising feature is the impression that the heart of less than average size. This supports the hypothe that there is a variability in the quality of cardi tissue, and unquestionably disposes of the long-he fallacy that violent exercise leads to permane cardiac dilatation.

I have stated that there is very little difference the cardiac frequency upon exertion between athletic and a non-athletic heart. Some differen however, may be noted in their deceleration cessation of exercise, and this is of some interest

uggesting a means of estimating cardiac efficiency. ts limitations are obvious; an untrained man annot be subjected to prolonged exertion and, for easons which I shall give later, I doubt if the usual xercise tests in the laboratory have much value. regret that it has been impracticable to arrange to arry out on distinguished athletes the prolonged and umerous investigations which are necessary; isolated bservations, especially on competitive occasions, are itiated by psychical disturbances. With this apology will now refer briefly to the results of personal experiients, conducted over a period of 14 years, and epresenting the averages of a very great number of bservations.

A man accustomed to running can acquire a erfect automaticity of action, and so a fixed speed. hus, I myself discovered that I could run for ten iles at a fixed rate of 6 minutes, 32 seconds per mile. dopting this as a constant velocity, variations of he distance run gave a convenient estimate of the ork performed. Such a proceeding has naturally an dvantage over any mechanical exercise, such as nning up and down stairs, stepping on and off a air, lifting dumb-bells and so on, the circumstances nd monotony of which prohibit prolonged research. ow, as one would expect, the maximum cardiac equency, whatever the distance run, is not very ariable. After 100 yards the heart is beating at 168; e resting rate is reached in a minute and a half fter cessation. After 220 yards, the normal is ached in 2¼ minutes; after a quarter of a mile, 20 minutes; after 5 miles not for 4½ hours, and fter 10 miles as long as 6–9 hours may elapse. lthough persistence of tachycardia is to some xtent proportionate to the duration of the exertion, e conspicuous feature is that the initial deceleration in all cases exceedingly rapid, and that the bulk the time taken is occupied by the slow final stage fter a relatively slow rate of frequency has been ached. Thus, even after ten miles, the rate had llen from 192 to 120 in two minutes. Duration of xercise plays a larger part in prolonging the freuency than intensity of effort, for to run a furlong full speed is, subjectively considered, as exhaustg as five or even ten miles at the slow fixed rate. et the resting stage after the fast furlong is reached 17 minutes. Persistence of cardiac frequency ould appear to be due to inhibition of vagal tone, d is associated with increased metabolism.

Effort Syndrome.

It may be pertinent to consider whether the phenoena of prolonged cardiac frequency can be brought to line with those noted during the war in the -called "soldier's heart," a term naturally intended draw attention to factors inseparable from military e, and to suggest a sort of occupation disease. hese symptoms are, however, familiar enough civil life, and they were suitably included by r Thomas Lewis and those working under s direction in the general term "effort syndrome," describing the condition of an individual nstitutionally ill-adapted to exertion. The ore active circumstances of military life do t create the condition, but simply unmask it. he subject of effort syndrome has a greatly reduced pacity for exertion, and his inefficiency is demonated by the extent to which deceleration is proged, even after trivial exercise within the subject's f-accepted limit—e.g., doubling 100 yards slowly—en as long a time as 9½ minutes is required before e resting rate is reached. Hyperpnœa and vasotor instability are also very evident, and I am able to agree that any definite evidence exists that e heart itself is the chief factor to be considered.

It is difficult to separate a constitutional defect m a disability amenable to treatment. I have n from personal experience how half a dozen lled investigators with a bias towards different ological possibilities unconsciously divert the estionaire of a patient with effort syndrome wards the particular cause they favour, whether it be psychic, toxic, rheumatic, endocrine, or exertion. If, as I believe, the condition is constitutional, it is again difficult to incriminate any one system. The subject may possess ill-developed coronary vessels, poor contractile power, or defective muscle-fibres. The inefficient athlete convicted of a yellow streak may be unfairly condemned; the yellow streaks may be in his heart muscle. Or an over-active cortex cerebri may fail to protect the heart from uneconomical over-activity. Or the fault may be biochemical, a disturbance of the normal relationship between the production of acid in the muscles and excitability of the respiratory centre. There may even be a more general disturbance of metabolism, and the equilibrium between the reaction of the red cells and that of the plasma may be upset. In diminished alkalinity of the blood less carbon dioxide is needed to excite the respiratory centre, so that hyperpnœa is easily produced.

I should be more convinced that shell shock and gassing might produce this condition had I been personally acquainted with men who, although previously possessing a good exercise tolerance, had exhibited effort syndrome after their ordeal. The sensation of being gassed, which I know from personal experience to be terrifying, may well disturb a hypersensitive medulla; similarly, trench fever may, according to one's predilections, be regarded as acting upon the myocardium or the vaso-motor centre. The cardiac muscle is, upon the authority of eminent cardiologists, very susceptible to bacteria and other toxins. Nevertheless, I doubt whether the temporary depression of activities in toxæmia is an indication that the heart is affected. I have always regarded the subjective sensations, asthenia, excessive perspiration, and so on as of vaso-motor origin. Were the heart directly affected, would not the influence of exercise upon the cardiac rate and recovery be manifest? On two occasions, when suffering from a toxæmia with pyrexia of 102°, I ran four miles; once with the hope that the infection might be aborted, once deliberately to see what would happen. The sense of exhaustion was considerable, but neither the cardiac rate at the termination of the exercise nor the prolongation of tachycardia varied in the slightest from observations made when the same exercise was taken under ordinary conditions of well-being. Graduated exercises produce improvement in some cases of effort syndrome, yet this does not appear to me a proof of training of the heart as such. The improvement which takes place may be a result of better coördination of the centres involved. I cannot regard the exercise tolerance test as any indication of the efficiency of the heart. It certainly has a distinct bearing upon capacity for exercise, but that is bound up with many other factors.

RESPIRATION IN EXERCISE AND SECOND WIND.

At the beginning of exercise, and frequently in anticipation, the respiratory centre, in common with the other medullary centres, is psychically stimulated, so that the frequency and depth of breathing are increased. During exertion, both oxygen deficiency and increase in the hydrogen-ion concentration of the blood increase the activity of the respiratory centre; the oxygen deficiency increases the sensitivity of the centre to its specific stimulus, the hydrogen-ion concentration. Probably carbonic acid is a stimulant independently of its acid property when in solution. Rise in temperature, which may occur and which, in fact, must occur if the exercise is sufficiently intense and prolonged, also increases the responsiveness of the centre. The respiratory centre is called upon to ensure maximum ventilation of the lungs and to regulate the reaction of the blood.

A comparatively trivial change in the reaction of the blood may bring about a large increase in pulmonary ventilation, and it is suggested that this circumstance provides an explanation of the phenomenon "second wind." At a more or less fixed period in the course of exercise the sensation of acute breathlessness passes off, yet more rapid breathing is evident.

Nor is the change restricted to the respiratory side; in a well-marked case it seems as if a new supply of energy had been tapped. Pembrey and Cook concluded that the cause was cardiac, as a less frequent and more regular contraction of the heart occurs after the advent of second wind. Considered chemically, however, the characteristics of second wind are a fall in the alveolar tension of carbon dioxide and a decrease in pulmonary ventilation due to diminished hydrogen-ion concentration of the blood. This diminution can only mean a lowered production of acid in the active muscles or a more rapid oxidation, and this must imply a more perfect adjustment of all the coördinating factors which are essential for efficient violent exertion. By the time the athlete has got fairly into his stride, and all systems are working at their highest efficiency, second wind may be said to be established.

It will be understood why the phenomenon may be almost abrupt in one man and so gradual as to be imperceptible in another, according to the method of adjustment. It is because of the dramatic change in the first type that the term has arisen, but in the perfectly trained athlete it might be said that the "first wind" is never lost until general fatigue sets in. It is exceedingly difficult to count one's own respirations, for such attention is inimical to accurate observation. But so far as I have been able to ascertain during the course of a run, the respirations increase gradually to 30 per minute and then rapidly to about 54. Despite the polypnœa there is no sense of distress, but it is of course impossible to estimate the depth of the respirations.

Influence of Emotion.

The association of emotion with activity of the visceral sympathetic system is well known. Stimulation of the medullary centres concomitantly with stimulation of the muscles causes an increase in pulmonary ventilation, accelerates the cardiac rate and contractile force, and dilates the coronary vessels. This massive activity is bound up with increase of adrenalin, which, in addition to its so-called sympathetic action, stimulates the liver to turn out glycogen and so increase the available supply of circulating sugar. Glycosuria occurs during athletic activity, especially in connexion with emotional strain, and hypoglycæmia from adrenal exhaustion is seen in very prolonged feats of exertion. Contemplation of increased adrenal activity prepares us to understand how an emotional stimulus can call forth an unexpectedly great effort apparently beyond the athlete's powers, for instance the supreme final spurt of a man on the verge of collapse.

Blood Pressure.

Among the discrepant statements on the effect of exercise is that relating to blood pressure, and again the contradictions are explained when the circumstances of investigation are appreciated. It is interesting to refer to what is, perhaps, the earliest observation upon the subject. Dr. Mahomet, then pathologist to St. Mary's Hospital, stated after his investigations of Weston, the long-distance walker, that exercise might reduce or raise arterial tension. Reduction occurred, he said, if the subject was out of condition, and might produce syncope from cerebral anæmia. On the other hand, he explained a rise of arterial tension as due to irritation of the vasomotor nerves by an exhausted brain, and hence to contraction of the arterioles, or, alternatively, as due to capillary obstruction from impaired nutrition of tissues.

To determine the influence of exercise upon the blood pressure it is essential to make observations during the exercise, when it is found, as one would expect, that a rise is invariable. If observation is delayed until the termination of exercise, even if only a few seconds have elapsed, a fall below the resting rate will be detected. It is easy to see, therefore, how diametrically opposed statements have been made. The rise in blood pressure may be considerable without much concomitant increase in cardiac rate, as in lifting a heavy weight. A high arterial pressure is absolutely necessary for the efficient performance of muscular work. The rise is provision for ensuring a maximum supply of oxygen, as during exercise the flow of blood through the muscles may be six or eight times greater than at rest. Furthermore, the coronary blood flow depends essentially upon arterial pressure. The systolic rise is much greater than the diastolic rise, and an increase during exercise of 80 mm. is by no means unusual.

Increased arterial pressure is due not only to increased output of the heart, but also to constriction of the splanchnics and dilatation of the peripheral vessels. Splanchnic constriction is due to impulses which, arising in many ways, psychical and chemical influence the vaso-motor centre, whilst arterial tone is lessened by metabolic products.

Immediately at the end of exercise the muscles relax instantaneously, the depleted veins of the abdomen and limbs take up the blood flowing from the capillaries, the heart is momentarily robbed of its supply and there is a steep fall in arterial pressure. This fall may be responsible for a temporary giddiness and faintness, and so naturally susceptible to gloomy misinterpretation. The pressure remains reduced until the veins fill; this overflow feeds the heart, so raising the arterial pressure, which gradually falls to the pre-exercise level and often a little below it within three or four minutes. This is, of course, in striking contrast to the delayed reduction of the increased cardiac rate.

The athlete's resting blood pressure is distinctly low. Hence, whilst his arterial system is subjected to very considerable pressure for the limited period of exercise, there is compensatory reduction during his resting life. There appears to be no foundation for the statement that arterio-sclerosis—i.e., a degenerative change—occurs in the vessels as the result of much violent exercise. Certainly, so far as blood pressure estimations are valid, no evidence is forthcoming. When strain has been regarded as the determining factor of arterial changes, the part played by syphilis, alcohol, tobacco, and other toxins as well as the natural quality of the arterial wall, has to be assessed. To see whether 27 years of exercise would show an effect upon the arterial system, a portion of my left radial artery was excised. The section has been submitted to Prof. Sir Edward Sharpey-Schafer, who reports that the details are indistinguishable from those of a radial artery of a healthy young man who has taken very little exercise.

Professors and directors of physical education in the American colleges are often prepared to judge the fitness of an athlete by his response to posture as indicated by alteration in his blood pressure and cardiac rate. When a very fit man rises from the horizontal position, acceleration of the cardiac rate should be trivial, a small rise of blood pressure is usual, and these two results may be correlated into a factor of physical efficiency. An increase of cardiac rate of less than four beats per minute and a rise of blood pressure of 10 mm. would be graded 100 per cent. A man with very poor vasomotor tone, either constitutional or after illness, will often show a fall in blood pressure and a considerable rise in cardiac frequency. My own investigations do not lead me to place any reliance on the test as an index of athletic efficiency, since there are many discrepancies. Above all, emotional factors produce most violent disturbances, vitiating any attempt at systematic investigation.

The Temperature in Exercise.

The efficiency of the body as a machine has been estimated by Benedict and Cathcart at 20 per cent. in an average untrained subject and 33 per cent. in one fully trained. A great deal of heat is inevitably produced which cannot be converted into mechanical work. To a certain extent heat ensures maximum

fficiency. A rise in temperature increases the excitability of the nervous system and especially, as I have entioned, of the respiratory centre; it causes the cretion of more fluid from the synovial membrane nd so smoother working of joints. In homely nguage, the engine does not work at its best until is warmed up. Perhaps the most important consquence of raised temperature is the increase in the hole chain of chemical action involved in muscle etabolism. The velocity with which human hæmobin parts with its oxygen increases about fivefold r a rise of temperature of 10° C., the velocity with hich it acquires oxygen being unaltered. During distance race a rise of temperature of 7° F.—i.e., ' C.—is not exceptional, so that the velocity ith which oxyhæmoglobin can break down is ubled. One observer has stated that the temperare of Marathon runners actually falls, but his records ere based upon mouth determinations which are alueless. Rectal temperatures show that a rise variably accompanies exercise, the extent depend- g upon the external temperature, the humidity of e atmosphere, and, of course, the severity of the ercise. I have reason to believe that a subantial psychical rise may occur when there is mpetition.

A large number of personal observations show that e rectal temperature after a run of about nine miles generally between 102° and 103° F. The highest mperature I ever noted was 105·8°, on a day when nditions were particularly unfavourable to heat loss. ie temperature rapidly falls and reaches normal thin two hours. There is clearly danger of hyperrexia in prolonged efforts under unfavourable nditions. It is the practice for the classical Marathon ce to be run in one of the summer months and nerally during the hottest hours of the day, a actice against which I have more than once warned e authorities. At the Olympic Games at Stockholm 1912 a Portuguese competitor collapsed on the road d died of alleged sunstroke, which was probably at-stroke. During the games at Paris in 1924, the ,000 metres cross-country race was run on an sufferably hot, humid day without a breath of nd. Nearly all of the few competitors who finished re in a condition not only of collapse but also mental distress and disorientation. When the rathon race was held a few days later, there was tunately a fall in the temperature with a cooling eze, or fatalities might well have occurred.

Comparatively simple experiments show that there no foundation for the idea that the pyrexia of exere determines the persistent cardiac rate. Elaborate d thoroughly conclusive experiments will be found an article by Martin and others in the *American urnal of Physiology*, 1914, xxxv., 211.

Changes in Blood and Urine.

During exercise on the level or at comparatively v altitudes increase in both red and white cells curs, but above 2000 feet the increase is restricted the leucocytes. Exercise causes the passage into e blood of a number of reserve red cells which lie rmant, and which, in consequence of splanchnic nstriction by adrenalin, are dispersed to the periery and so ensure a maximum supply of oxygen the muscles. But at altitudes no such dispersal occur; the perpetual demand for a maximum tribution of red cells to the periphery permits of reserve. Leucocytes, however, increase in the ipheral blood at altitudes equally as on the level, ause exercise squeezes lymph out of the muscles l drives it to the heart, and with it are carried the ocytes gathered from the tissues. The altered ribution of the red cells, at first determined by nchnic constriction, is continued when perspiration s in, for this produces increased density of the od and so increased oxygen-carrying capacity for t volume. The advantage of free perspiration thus uires an additional significance, apart from the idance of over-heating and the lowering of perial resistance.

Apart from the question of albuminuria, which has acquired a special importance, the investigation of nitrogen metabolism in exercise has received little attention from modern workers. The feats of Weston, the long-distance walker, in the year 1870 supplied an opportunity to contemporary physiologists, who exhaustively analysed his diet and excreta for many weeks. In this connexion must be mentioned such classic names as Austin Flint in America and Pavy in this country. The conclusion ultimately derived—that non-nitrogenous food is the source of muscular energy—is now of historical interest, since observation of the respiratory quotient shows that the energy expended by muscles must ultimately be derived from fat and carbohydrate, with a preferential utilisation of the latter.

There is, as Ryffel has shown, an increase of lactic acid in the urine after exercise. There is also an increase in phosphoric acid, which apparently plays some special rôle in the breakdown and restoration of glycogen in muscle, and it has been stated, though I have been unable to confirm this, that the muscular output of a trained man is considerably increased by an ingestion of phosphates. The Germans administered phosphate of sodium in large doses to their "storm troops."

I have frequently found an increase in oxalates after an intense effort, though whether the metabolic activity is of nervous or intestinal origin I am unable to say.

There is sometimes a transient (physiological) glycosuria after exercise. The enormous increase in adrenalin in the circulation explains a temporary hyperglycæmia with glycosuria; the subsequent adrenal exhaustion, which may occur in protracted efforts, would be responsible for the hypoglycæmia which has been described in Marathon runners. When the existence of hypoglycæmia was first demonstrated by insulin, I ventured to speculate that the symptoms of distress from exertion might find their explanation in hypoglycæmia. Levine and his fellow-workers in America have shown that hypoglycæmia occurred in Marathon runners who exhibited exhaustion, which is usual between the fourteenth and eighteenth miles. They correlated the degree of distress with reduction in blood-sugar, and in subsequent observations upon the same runners they prevented distress by the administration of sugar before and during the race. Although it is unlikely that hypoglycæmia can be directly responsible for fatigue, save in very prolonged feats of exertion, nevertheless the part played by carbohydrates encourages their ingestion at a suitable period before the effort. It is interesting that the modern conception of carbohydrate metabolism has endorsed this long-standing empirical practice of athletes.

Deaths from Exertion.

Excluding hyperpyrexia, it is significant that the majority of sudden deaths associated with some feat of exertion are on the golf links, and their subjects elderly and plethoric with degenerate arteries. In the rare instances when a young and presumably healthy athlete has succumbed, there has been too ready a tendency to assume the influence of exertion, and post-mortem inquiry has rarely been undertaken. Last summer a verdict of heart strain was returned in the case of a young man who fell fainting from an eight at Henley and was found dead on removal from the water. I made all possible inquiries, and the doctor who had been called was kind enough to send me the fullest details. There had been, in fact, no antecedent exertion, as the boat had only just left the landing-stage. No autopsy had been performed, but from the doctor's description of the body it seems almost certain that status lymphaticus was responsible.

Prejudice must inevitably play a part in deciding whether or not any permanent alteration in the heart can result from one extreme feat of exertion or from a long-continued athletic career. Some observers regard any circulatory disability as being

attributable to exercise, and do not realise that exercise has revealed a latent organic defect in a heart hitherto regarded as sound. In an article in 1870 the medical officer to Rugby School, deprecating running on account of the strain thrown on the circulation, noted that "the recent death of England's greatest sprinter from aortic aneurysm is significant." So it is, but not exactly in the way he meant!

Sir Clifford Allbutt suggested the term "overstress" in preference to "overstrain," since any strain is overstrain. The behaviour of a healthy heart under great stress bears no resemblance to cardiac failure—dilatation, cyanosis, venous engorgement, enlarged liver, œdema—so that failure of ventricular muscle cannot be responsible. I have already indicated the fallacies relating to recognition and estimation of enlargement of the heart; auscultatory peculiarities, sometimes demonstrated, often occur under normal conditions. When one recalls the symptoms described by nervous people with perfectly healthy hearts one realises that subjective sensations are valueless. Such factors as chronic infections, dyspepsia, insufficient sleep, and puberty with its inherent nervous instability, are likely to be overlooked in adolescents and ill-effects from violent exercise are too often assumed. This is not to say that overstress leading to permanent strain is impossible, though the exact method of its production may be problematical and its detection may be beyond our capacity. There may be an alteration in the molecular state of the fibres of the cardiac muscle, some subtle change resulting in lessened contractile power. This is all hypothetical. There is no evidence that any such effect ever occurs, and I prefer to visualise overstress, and perhaps strain, if it occurs, as a far more general condition. A healthy and powerful heart is a sine quâ non to a would-be athlete, but the feature which distinguishes the athletic man from the non-athletic is the equilibration of all the factors concerned—heart, lungs, muscles, and skin, as well as his biochemical machinery. If overstress really occurs it lies in a general disturbance of this fine equilibrium. Sir James Mackenzie had "personally never seen such a thing as a strained heart." Sir Thomas Lewis expresses the same view. He says that the circulatory organs are built to stand the strains which they themselves create; their reserve is often underestimated. When the call is excessive, it is the full supply of blood to the muscles which will fail and not the heart. Dr. G. A. Sutherland points out that certain alleged cases of strain are really organically damaged hearts, unrecognised until the breakdown, whilst others are instances of natural peculiarities mistaken for pathological conditions. Cabot, in a classification of groups of heart disease, remarks that, had any of them occurred in athletes or ex-athletes, they would have been called athlete's heart.

Exercise and the Lungs.

Very little attention has been paid to the possible deleterious influence of exercise upon the lungs. From time to time the death from pneumonia of a young man with an outstanding aquatic record has stimulated the gloomy forebodings of those who are convinced that even one severely contested boat race may lead to pulmonary weakness and greater susceptibility to infection. From time to time the development of pulmonary tuberculosis in a brilliant young athlete affords sufficient proof to those disposed to deprecate violent exercise. I venture to put forward the possibility of a direct relationship between the tuberculous diathesis and athletic ability, although it is very difficult, if not impossible, to prove that the tuberculo-toxin may confer a flair for athletics. In my own experience, two famous middle-distance runners have phthisis, and a third was compelled to leave this country to reside in South Africa a year after terminating an exceptional athletic career. That violent exertion contributes to the progress of a lesion is a reasonable charge, although it is at least arguable that the exercise may operate in the opposite direction. The instances of pneumonia are too isolated to exclude coincidence. On such a line of reasoni exercise might be held responsible for any concomita occurrence, good or bad. The oarsman is usually ta and tall men are less resistant to diseases of the lur than men of more compact build. The after-histor of men who rowed in the boat race show that t participants have a better life expectation than t average. Morgan's book, "University Oars," w published in 1873 as a counter-claim to Skey's lett to the *Times* in 1867. Morgan undertook an exha tive inquiry into the past and present health of t men who had rowed in the 40 preceding boat rac Meylan studied the after-histories of the Harva oarsmen who rowed from 1852 to 1892. Both his a Morgan's figures showed an increased life expectati of five years over the insured group, which is a select risk. Such figures are convincing, but the mate investigated is exceptional, and it may be contend that their life expectation might have been ev longer if they had not rowed. They serve at le to show that there is no indication of an adve effect. Dr. Bradford Hall has recently publish statistics of the longevity of cricketers.

Organs of Digestion and Kidneys.

The influence of exercise upon the organs of dig tion is to a considerable extent beneficial. T general stimulation of metabolism, the increa elimination of waste products, not to mention habitual psychic associations, are, as a rule, favo able to appetite and digestion. Yet digestive turbances among the athletic are far from infreque Indigestion is one cause of "stitch," but this i disability with many possibilities. There is this day some survival of traditional absurdi about diet in training. Such a cause for dyspep can, of course, be avoided, as can the disadv tage, not to say the danger, of undertak violent exercise soon after a heavy meal. If fairly widespread belief that appendicitis and d denal ulcer are relatively more frequent in athl young men is true, it is not difficult to predic plausible reasons. The powerful contractions abdominal muscles thrust the viscera down into pelvis, and from mechanical difficulties the ile becomes unnaturally full and sags. Traction on duodeno-jejunal junction causes duodenal distens and, subsequently, yielding in the first (relativ mobile) part, with a tendency to give way on convex surface—the commonest situation for ulcer.

The tendency for violent exercise to prod albuminuria has naturally been regarded as a ser disadvantage and an indication to prohibit exer to predisposed persons. In his contribution to *Transactions* of the Medical Society of Lon (vol. xxx., p. 18) Dr. Collier, of Oxford, expressed opinion that albuminuria should no longer be regar as a cause for pessimism and a reason for limi the subject's activities. Was it not, he asked vascular occurrence in a comparatively labile syst To do full justice to Dr. Collier's contribution should remember that the bare occurrence of a minuria had previously been regarded as evidenc renal disease. I have been struck by the compar of my own observations with those of Dr. Co and Dr. Lemprière and others with excepti opportunities for investigating athletes. Dr. Co invariably found albuminuria in oarsmen after a r row; Dr. Lemprière found it in schoolboys even comparatively short runs. Working, as I h among seasoned track athletes undertaking the extreme exertions, I have seldom found abno urinary constituents. I believe that in rowing mechanical side of the exercise conduces to co tion and pressure upon the prostate and culæ seminales, with the subsequent appear of their secretions in the urine. Moreover, the and relatively labile vasomotor system of n oarsmen and all schoolboys bring their post-exe albuminuria into line with postural and cy albuminuria. I have in several instances found

he albumin was precipitated by dilute acetic acid n the cold.

After very violent exercise a few casts are generally ound, but as they are transitory any renal alteration nust be trivial. Nothing short of a vigorous 5 mile run roduces casts in my own urine, and none is present ix hours after the effort. A professional pedestrian, ged 51, after a successful attempt upon the world's ecord for an hour's walk, passed granular casts for 2 hours only. An Olympic champion, aged 23½, after unning half a mile inside world's record time, passed rine which contained only the faintest trace of lbumin and no casts. I select these as two athletic eats of exceptional severity; it is clear that renal hanges due to the most violent exercise are ephemeral nly.

The Nervous System.

I have more than once indicated that the 'seventies vere particularly intrigued by the evils of athletics, he serious possibilities of which extended even to nsanity. In a medical journal of 1870 I have iscovered a long account of the influence of xercise upon a university oar, who, trying to ombine his athletic career with an attempt to vertake academic arrears, became mentally eranged. I cull the following from a paper in 876: "If any psychologist will take the trouble o trace out the history of each of our eminent edestrians, he will discover that a very large roportion of them have been subject to some ort of madness." At the present day the worst 'e can say about the nervous side of the athlete is nat he is neurotic, and we do not necessarily maintain nat his neurosis is the effect of exertion; but rather nat it is the outcome of competition, anxiety, public dulation, and the like. The athlete preparing for really important contest thinks of little else roughout the whole of his waking hours. The rain imposed upon prominent lawn tennis players ngaged in competition for the greater part of the ear may well lead to a nervous condition which is nly indirectly related to the physical exertion. The ontinuous overflow of nervous impulses to the nuscles, the complex processes involved in coördinat- ig skilled movements and in focusing attention, ogether with such mental factors as excitement, pprehension, anxiety, and judgment, must involve considerable expenditure of nervous energy during ompetitive physical exercise. This applies with reater force to young women and girls participating n tournament play and track athletics. Their nore delicately organised nervous system and greater isposition to psychical disturbances, not to mention ne diversion of energy from channels for which it is pecially required, are factors conducive to over- ress. Excluding feats of endurance, for which a elative phlegmatism and stolidity are desirable, the thletic temperament approximates to what is opularly termed the "highly strung," and the thlete is generally "vago-tonic."

The literature of physical exercise in its physio- ogical and pathological aspects is a great deal more oluminous than is generally recognised. For many nportant contributions we are indebted to American hysicians, who enjoy special opportunities for esearch upon the athletes in their numerous colleges nd universities. On the Continent, and particularly n Austria, systematic investigations on the cardio- gical side have been performed with a thoroughness hich experience of Teutonic discipline prepares us to xpect. But to select only a few outstanding names, eonard Hill, A. V. Hill, Pembrey, Barcroft, Haldane, nd Douglas have contributed results in this country s important as any of those of their transatlantic and ontinental colleagues. Above all, I feel that a special xpression of appreciation is due to the late Prof. ainbridge. I read his work, "The Physiology of uscular Exercise," on its appearance in 1919, but a ull appreciation is possible only by a re-perusal after a irly comprehensive survey of the general literature. o Prof. A. V. Hill I am personally indebted for much enerous assistance in elucidating several points.

An Address
ON
POST-OPERATIVE SEPSIS
IN GENERAL AND PUERPERAL SEPSIS IN PARTICULAR.

Delivered at the New Zealand Medical Association Meeting at Hamilton, N.Z., February, 1928,

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When an operation "goes septic," the organisms causing the mischief are derived from one of two sources. Either they come from outside the patient's body or they are resident on or in the patient's body at the time of the operation. We describe the first of these happenings as infection from an extrinsic source, or more shortly, extrinsic infection; and we describe the second as infection from an intrinsic source, or intrinsic infection. For extrinsic infection to occur conveyance is a necessity, and the possible agents of this are the hands of the operator or his assistants, their saliva, their sweat or their hair, the instruments used, the ligatures and sutures inserted, the swabs, sheets or dressings applied, or even the dust of the room or theatre in which the operation takes place. For intrinsic infection to occur conveyance is not a necessity if the septic organisms are resident on the part actually operated upon, but it is a necessity when the part operated upon is initially aseptic and the organisms come from some other area of the body. The possible agents of conveyance in this event not only include the hands of the operator and his assistants, but also the blood stream and lymphatic stream of the patient, and all other currents and flows in his or her body which are capable of transporting bacteria. The problem of obtaining surgical asepsis, both during and after an operation, therefore, resolves itself into (1) obtaining initial sterility in the area operated on, and (2) preventing conveyance to the area of organisms potential for sepsis from elsewhere.

Initial Sterility.

Bacteria are normally resident over all the outer surface and most of the inner surface of the human body, the areas which are an exception to this rule being the interior of the uterus and the urinary tract down to the urethra, and probably also the biliary and pancreatic ducts and the smaller bronchi and pulmonary alveoli. The distribution of the bacteria is, however, very variable as regards their quality, for the organisms found on the skin are generally of low potential virulence except in certain areas, whilst those resident in the alimentary tract are of much greater potentiality for harm, especially in certain parts of it.

The same variation is observable in quantity. Thus the skin of the arms, chest, and upper abdomen contain few, as compared with the pubes; the fork and the inner sides of the thighs, and the stomach and jejunum few as compared with the mouth, colon, and rectum. Of all areas the lower bowel is normally most dangerous, not only because it is the most heavily infected, but because the organisms it contains are mostly of considerable potential virulence. It is obvious from the results which follow traumatic perforation of the gut, or bruising or strangulation of its wall, that even in the most healthy person the bowel organisms, far from being easily tolerated by the tissues in their immediate neighbourhood, are, in fact, held within bounds by a fence of tissue resistance so delicate that the least injury to it is followed by a dangerous invasion. Around the anus there exists a zone of skin whose bacterial content becomes more and more identical with that of the

lower bowel as the anus is approached. This can be proved by making cultures, but common observation shows it. If a game bird or hare is hung it is the fork, the inner and upper thigh that first becomes "high," and every surgeon knows that incision fringing on this area, such as the inner end of that for inguinal hernia, or the lower end of a subumbilical median incision, are points favoured by suppuration. This was strikingly exhibited in war wounds, as all who had charge of wounded men remember. The nearer to the anus, the greater the probability of grave infection.

The difficulty, therefore, of procuring initial sterility of an area to be operated upon varies very much, according to the anatomical position of that area. Skin can be sterilised by certain antiseptics, though the antiseptic must be applied for a far longer period than is usually deemed necessary; the average preparation of the skin for an operation, at most, achieves but a temporary surface sterility. As, however, the skin organisms are usually of very low potential virulence, this does not much matter, except in areas like the perianal zone, where it may matter a great deal.

The problem of procuring initial sterility of the inner surface of the body, as compared with its outer surface, the skin, is at present practically unsolved. No means are known at present of sterilising the interior of the bowel, or of the mouth, or of the naso-pharynx or nose, short of applying antiseptics in such concentration that they kill the surface they are applied to. The vagina is in a rather better case, for if it is not too heavily infected its surface can, I believe, be sterilised.

Preventing Conveyance.

Septic organisms are conveyed either by extraneous agency or by natural agency. Under the term "extraneous agency" falls all conveyance by the surgeon and his assistants, and also conveyance by dust, but fortunately this method of transportation must be very rare, for if not, surgery would be impossible. Experiments carried out by Andrews on the germ-content of the air of Oxford-street, in London, showed that pathological organisms were practically absent.

Under the term "natural agency" falls conveyance by the blood stream, the lymphatic stream, and all other natural flows capable of transporting organisms from one part of the body to another. Take, for example, a traumatic hæmatoma of a deep-seated muscle which presently suppurates. The muscle was almost certainly sterile at the time of injury, so that the organisms of suppuration must have been transported into the injured area from elsewhere, probably by the blood stream. Again, the organisms in a suppurating hæmatocele due to extra-uterine gestation probably come from the intestine by lymphatic transudation through its wall. Bond and others have shown that microscopical particles of indigo and carmine placed in the upper vagina are transported into the uterine cavity and even into the tubes by a current which apparently works along the walls of the canal in the reverse direction to the general flow.

The problem of preventing the conveyance of bacteria from extrinsic sources to the operation area is solved by the absolute sterilisation of all instruments, appliances, and material used at the operation, by the wearing of sterile gloves, masks, and gowns by the surgeon and his assistants, and by the observance of the recognised aseptic ritual of an operating theatre, which forbids anything already sterilised being brought into contact with any object not sterilised.

On the other hand, the problem of preventing the conveyance of bacteria from intrinsic sources to the operation area is very far from being solved. In certain operations a part of the area to be operated on can be made sterile to start with, while other parts cannot, as, for instance, in resection of the bowel, where the abdominal wall can be made sterile but the intestine cannot. To prevent transportation of organisms from the bowel to the abdominal wound the latter is elaborately shielded by sterile cloths or rubber. But even with such precautions the possibility of extraneous conveyance is only partially met, for bacteria may be, and probably always are conveyed from the interior of the bowel on to the peritoneum immediately adjacent to the line of intestinal suture. Fortunately dosage counts in infection; that is to say, the tissues themselves can deal with bacteria transported on to them, provided the number implanted be relatively small. The factor of tissue resistance comes into play as well as the essential virulence of the organisms, and this not only varies immensely in different individuals but depends on the treatment the tissues have received during the operation. Bruised, ecchymotic, half-strangled, and mauled-about tissue is much less resistant to bacterial assault than tissue that is uninjured.

The part of the problem, however, that at present almost baffles us is to prevent the transport of organisms from intrinsic sources on to the operation area by the natural agency of the currents and flow existing in the living body. For instance, we have not, nor, probably, shall we ever have, any means of preventing organisms transuding through the bowel wall into a pelvic hæmatocele, nor of preventing bacteria in the upper vagina ascending into the uterus. The dilemma has to be got over in other ways: first by seeing to it that the organisms resident in the patient's body, not only in the operation area but in all other areas, are of as low a potential virulence as possible, for then their transportation does not matter so much; and, secondly, since virulence is entirely relative to tissue resistance, by increasing tissue resistance or, at least, being careful not to lower it by unnecessary trauma. Tissues damaged to the degree of partial devitalisation may possibly have an actual attractive effect on bacteria. Another possibility is that transportation of organisms is always going on in the body fluids, but in such minute quantities that effects are only produced when there is some marked local lowering of resistance. Whichever be the explanation, it is certain that they increase enormously in damaged tissue not only in number, but in virulence.

The modern surgeon therefore prefers, if there is time, to abolish from the patient's body before the operation all harbourages of obvious sepsis, such as foul teeth and unhealthy tonsils, whilst he carefully avoids in the performance of the operation rough handling and tearing and all other force that unnecessarily bruises the tissue. As a result of the ever-increasing application of the principles I have summarised, the surgical results of to-day have very markedly improved on what they were 20 years ago, and they will continue to improve with every addition to our technique that makes for more perfect sterilisation of the operation area to begin with, greater certainty of preventing the conveyance to it of organisms during and after an operation, and increased delicacy in the handling of the tissues.

On Puerperal Sepsis in Particular.

The reason why I have begun this address with a dissertation on surgical asepsis in general is that childbirth is the operation whereby the neoplasm of pregnancy is removed, and puerperal sepsis is the condition produced by septic infection of the operation area.

The operation may be performed: (1) by the woman alone; (2) by the woman and obstetric surgeon in coöperation; and (3) by the obstetric surgeon alone. The first of these we call natural delivery, the second assisted delivery, and the third artificial delivery. Having then examined the mechanism of post-operative sepsis as it applies to all operations, let us see how it applies in particular to the operations that collectively come under the head of childbirth, remembering that sepsis follows an operation because either (*a*)

operation area was not initially sterile; or (*b*) infection from an extrinsic source occurred during or after the operation by extraneous agency; or (*c*) infection from an intrinsic source occurred during or after the operation by extraneous agency; or (*d*) infection from an intrinsic source occurred during or after the operation by natural agency.

Natural Delivery.

When Nature operates her instrument is the uterus itself, and this works in an area that is normally sterile. The possibilities of infection from an extrinsic source, or from an intrinsic source by extraneous agency, do not therefore exist. When sepsis follows labour, during and after which no interference has taken place, either the uterus was initially septic or septic organisms have been transferred to it by natural agency from the vagina or elsewhere. Initial sepsis of the uterus is probably extremely rare, but one occasionally sees cases of puerperal fever in which pyrexia was noted even before the onset of labour. That the uterus might become infected from an intrinsic source by natural agency before labour began must be allowed, when we consider infections like acute osteomyelitis and other analogous conditions which are almost certainly conveyed by the blood stream. Infection from the vagina, on the other hand, is much more likely, considering the proved fact that microscopic particles from the upper part of that canal can be transferred by natural agency into the uterine cavity. Indeed, it is probable that such transference always occurs, but because the number of bacteria so transferred is small, and the bacteria themselves are of low potentiality, they perish under the bactericidal effect of the blood and serum exuding from the uterus. On occasion, however, the vagina may contain bacteria of high virulence, and then such transference would be liable to lead to grave results.

The organism commonly responsible for puerperal fever is a streptococcus, usually of the hæmolytic group, and often identical with *S. pyogenes*. Since streptococcal vaginitis is a very common complaint, and streptococci can often be isolated from the vagina without any sign of inflammation being present, the fact that absolutely natural labour can be followed by sepsis need occasion no surprise. That it occurs relatively so seldom must, I submit, be due to the small number of organisms capable of being conveyed into the uterus by natural agency and their usual low virulence.

Assisted Delivery.

When the woman and the obstetric surgeon coöperate, the possibility of infection by extraneous agency, both from extrinsic and from intrinsic sources, becomes added to infection from intrinsic sources by natural agency. We should expect, therefore, on purely logical grounds, that assisted labour would show a higher sepsis rate than natural labour, and in fact it does, in spite of modern preventive measures.

Until quite recently extrinsic infection was held to be the usual cause of puerperal fever, in spite of the fact that the measures taken against it so successfully in other forms of surgery, such as the use of antiseptics and the wearing of gloves and sterile gowns, have been generally employed in midwifery for a good many years without greatly diminishing the total number of cases, though they have sufficed almost to abolish the epidemics which were frequent in lying-in hospitals and which occurred from time to time in the practice of individual obstetricians. The fact is that most puerperal sepsis is made up of sporadic cases bearing no relation to one another, and the relatively poor results obtained by measures directed simply against the occurrence of extrinsic infection, as compared with their striking results for epidemics, necessarily suggests that the ordinary sporadic, unlike the epidemic, case is not due, as a rule, to extrinsic infection at all, but to intrinsic infection.

The entrance to the vagina lies in a skin zone over which intestinal organisms are more or less thickly spread, and these organisms, even in the most healthy person, are potential for sepsis. The bacterial content of the lower bowel represents the drainings from the whole of the alimentary canal, including the mouth, teeth, tonsils, pharynx, and appendix, so that in infective conditions of any of these the causative organisms are swallowed and presently attain the lower bowel and hence the skin in the neighbourhood of the vagina and vulva.

In assisted labour the vagina forms, as a rule, the main field of the operation, so that the surgeon not only has to work through and in an area which may initially contain organisms of potential virulence, but one to which the approaches are always more or less heavily infected. Therefore, even if he succeed in procuring asepsis of the vagina to begin with, he is still faced with the difficult problem of preventing infection during the operation by the manual carriage of organisms from its approaches. The greatest danger lies in introducing hands or instruments into the uterus, for then septic organisms can be implanted directly on the placental site, but even if they be carried merely as far as the upper vagina, a risk remains that they may be transported into the uterus by the natural mechanism.

The much greater frequency of tissue damage in assisted, as compared with natural, labour is another factor which deserves close consideration. Tears of the cervix, vagina, and perineum occur in natural labour, but with much less frequency than in assisted labour. Nor, on the average, are the tissues in their neighbourhood nearly so much bruised and devitalised, because they are not subjected to so much force. Severe tissue damage, because it forms a good nidus for the growth of organisms, is always dangerous, and is most especially so when the upper vagina and cervix are involved.

Artificial Delivery.

Two operations fall under this head, accouchement forcé and Cæsarean section.

In accouchement forcé the neoplasm of pregnancy is taken away through the vagina by the surgeon unaided, exactly as a submucous fibroid might be removed. The operation is not only a very severe one, involving great tissue damage, but it is carried out in an area which it is difficult to sterilise initially and very difficult to protect against the manual carriage into it of organisms from its heavily infected approaches. Practical experience bears out logic, for this is of all forms of delivery the most often followed by severe septic infection, and this would be the more apparent were it not that a large proportion of the patients operated on die by shock or hæmorrhage before sepsis has had time to develop.

There is another method of rapidly emptying the uterus called vaginal Cæsarean section, in which the cervix and lower uterine segment are deliberately incised from below, and sutured up afterwards. It is a difficult operation, only performed by practised obstetric surgeons, and it is less liable to be followed by sepsis than the classical accouchement forcé. There would appear to be two reasons for this. First, since it is carried out in operating theatres only and by very expert surgeons, the antiseptic technique employed is probably superior to that of accouchement forcé, which is usually performed under bad conditions. Secondly, the tissue damage inflicted is much less severe, clean-cut wounds replacing the bruised lacerations which the older operation necessitates.

In Cæsarean section by "election," which is performed either before or just after labour has begun, the vagina is shut out from the operative field, and as the uterine cavity is normally sterile and the abdominal skin can be rendered sterile or cut out of the operative field altogether, the surgeon works in what, from the point of view of asepsis, is an ideal area. The risk of extrinsic infection is deleted by the aseptic ritual of an operating theatre, whilst

the possibility of intrinsic infection by extraneous agency is rendered practically non-existent by the preparation and draping of the abdominal skin, so that only intrinsic infection by natural agency is left unguarded against. Though it is possible, after Cæsarean section, for organisms in the upper vagina to ascend spontaneously into the uterus and infect both the sutured wound and the placental site, the event is an uncommon one, and post-operative sepsis, which occurs after an operation performed with all the proper safeguards, is usually due to organisms finding their way across the peritoneal cavity from the intestine to the sutured uterine wound. This is analogous to what takes place when a hæmatocele becomes infected, and is probably brought about either by oozing from the uterine wound after the operation is finished, or by the partial strangulation of part of the uterine wall by ill-placed sutures. When such a misfortune occurs, the symptoms are those of a local inflammation of the uterine wound. Placental site infection giving rise to the symptoms of typical "puerperal fever" is very rare indeed.

When, however, the operation is performed after the cervix is open to the vagina the case is very different. We will call this Cæsarean section by "compulsion," since, on account of the considerable risk of post-operative sepsis that accompanies it, it is not performed unless the surgeon is compelled. This sepsis might be expected for far more menacing routes of infection exist in addition to those possible in the "operation of election." It was shown by Routh, from actual figures, that the risk of sepsis after Cæsarean section increases progressively with the time over which the uterine and vaginal cavities have been in continuity, and depends still more upon the amount of intravaginal manipulation that has been practised beforehand. This is the experience of all surgeons. The open cervix no doubt makes spontaneous organismal ascent more easy, and allows the head of the child to be fouled, so that it infects the uterine cavity as it is pulled up. The time factor would merely operate by increasing the period over which organisms might spontaneously ascend, but the ill-effects of previous manipulation and instrumentation can only be due to the carriage of organisms from the perivulval and perianal skin into the vagina and cervix. No matter how carefully the surgeon who carries them out is gloved and gowned, the danger is at the best only partly abrogated. It is the most striking proof we have of the reality of intrinsic infection by extraneous agency, and makes clear the reason why assisted labour is more likely to be followed by sepsis than natural labour.

SUMMARY.

Typical puerperal fever is least common after absolutely uninterfered-with labour and after Cæsarean section by election, in both of which the only risk that cannot be guarded against is intrinsic infection by natural agency. It is commoner after assisted labour, because an additional risk, which cannot easily be guarded against, is added—namely, the risk of intrinsic infection by extraneous agency. This is rendered more serious by the tissue damage, often severe, that is inflicted by the operation. It is commoner still after Cæsarean section by compulsion, because the uterus is directly infected as the child's head is pulled up, and is commonest after accouchement forcé, because severe tissue damage is invariably inflicted and the uterus is directly infected as well.

CONCLUSIONS.

The first conclusion to be drawn from the facts we have considered is that in obstetric, as in general, surgery there is no royal road to the abolition of post-operative sepsis. The routes and modes of infection are too many and too complicated to be countered by a single method of prevention. The organism commonly responsible for puerperal fever is a streptococcus, and it is, I think, generally admitted that pregnancy lowers the body resistance to this organism in a special degree. The streptococci found in puerperal fever have been closely studied in the endeavour to trace their place of origin, bu no consensus of opinion has been reached, nor is of primary importance. The killing of all streptococ and other organisms of sepsis, both local to the patie and local to the surgeon, is obviously the grand idea but its achievement is beyond our powers at presen The main harbours of sepsis, however, are known t us and must be attacked; the routes and modes infection which I have described can to a large exte be stopped up or countered, whilst tissue resistan must be exalted if a method can be found, and in th meantime preserved at its highest possible level b avoiding all unnecessary tissue damage.

Of the five operations by which the neoplasm of pregnancy may be removed, natural uninterfere with delivery is the one most desirable, for althoug Cæsarean section by election is no more likely to b followed by sepsis, it has certain other drawbac and risks. Unfortunately, Nature's operation inefficient for a certain number of cases, and assiste delivery has to take its place, in spite of the fact th its sepsis rate is a higher one. It should not therefo be resorted to until it is quite clear that the uter is unequal to its task, and the surgeon must tak every possible precaution to abrogate the risks th his entry on the operative field entails. This ca only be achieved by an antiseptic technique f more thorough than that commonly employed. Th wearing of sterile gloves, gowns, and the use of ant septic lotions are measures most efficient again extrinsic infection, but so long as a single organis remains unkilled in the vagina, or unkilled uncovered in the skin surrounding the entrance the vagina, the risk of intrinsic infection by th agency of the surgeon remains. The problem s us is indeed a difficult one, but until it is faced n only by every practising obstetrician but by th armchair critics and the State, no striking fall the yearly death-rate from puerperal sepsis can expected. If the operation were for the removal of large fibroid by the same route, the patient would fully anæsthetised in the lithotomy position on operating-table, with an assistant standing on eith side; all but the entrance to the vagina would heavily draped with aseptic cloths, the exposed sk and the entire surface of the canal would have be soaked with a powerful antiseptic, whilst the surgeo carefully gloved, gowned, and masked, would operat sitting in the best possible light. If this is the ide for the removal of one neoplasm it must surely for the other.

I have spoken as an idealist, but I am as conscio as anyone of the difficulty of attaining in obstetri what in other branches of surgery is the accept routine of practice. I have in the past written oft and strongly of these difficulties, and I have insist that they can only be removed when the lay pub realises that childbirth is a surgical operation requiri for its proper conduct the full gamut of surgic requirements. My object here has been to lay ba the processes whereby a woman becomes sep after childbirth, so that, clearly understanding the each obstetrician can think out for himself t solution of the problem with which he is faced.

WAGE-EARNERS' CLUBS.—Mr. W. H. B. Fletche chairman, speaking at the Chichester County Sessions Feb. 7th, said there was evidence of an increase in t reasonable use of licensed premises, and a tremendo decrease in the abuse of alcohol. There was a great deal improvement going on to the outside of licensed premis and he hoped it was being accompanied by improvemer inside also. The public-house was the club of the wag earning class. It was the place where they had opportu ties of social intercourse with their friends and neighbou which they could not get elsewhere, and he could not h feeling very strongly indeed that those who used the publ house as their social club had a right to look in those publ houses for something of the same amenities which the people got who were able to go to sumptuous restauran clubs, and hotels. If publicans and brewers would their part to carry out improvements that might possible. The sympathy and coöperation of the public in doing, Mr. Fletcher concluded, was assured.

POSTURE OF THE HAND IN CHOREA

AND OTHER STATES OF MUSCULAR HYPOTONIA.

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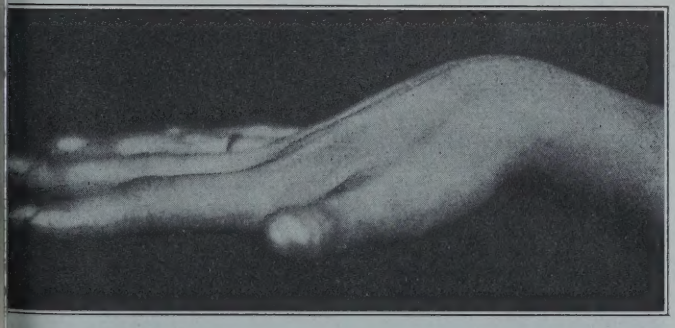
(*From the Medical Unit, the London Hospital.*)

THE posture of the outstretched hands often hibited by patients suffering from chorea is one of ie most familiar of abnormal attitudes. It is aracterised by flexion at the wrist and hyper-tension at the metacarpo-phalangeal joints. The gers are either straight or slightly flexed the interphalangeal joints, and separated, id the thumb is hyperextended and ducted (Fig. 1). This posture seems first have been described by Warner [2] in 1885 id has recently been the subject of con-deration by Wilson,[3] who has offered what pears to be the only proposed explana-on. He points out that the posture of ie hand in chorea is the "corresponding posite" of the normal resting posture of ie hand—namely, extension of the wrist id flexion of the fingers—and he concludes iat "a physiological shift" has occurred from one posture to its corresponding posite." He believes that "the demonstra-on of this physiological 'shift' in the case chorea can fairly be taken to argue a ndition of abnormal function of the rtico-spinal system, though with the mediate proviso that this abnormal state ed neither be of a structural sort nor have its timate origin on the motor or effector side." While agree with Wilson that the posture of the hand in orea is the corresponding opposite of the resting titude of moderate flexion of the fingers and

FIG. 1.



"Choreic" posture of the hand, characterised by flexion of the wrist and hyperextension of the metacarpo-phalangeal joints with separation of the fingers, in a patient suffering from chorea.

xtension of the wrist, I believe that it is merely the xaggeration of a normal posture, and that this xaggeration has a much simpler physiological xplanation than the one which he proposes. To emonstrate this it is necessary to examine the nergic distribution of muscular contraction in certain rmal movements and postures of the hand and ngers.

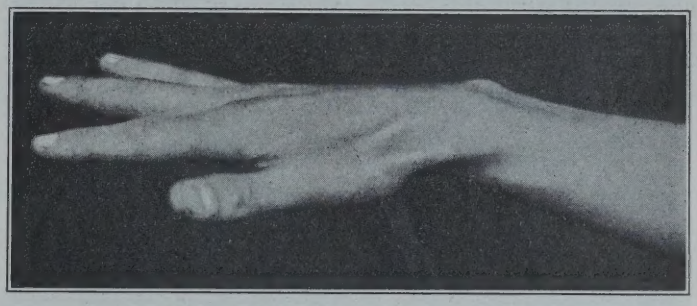
The Muscular Components of Movements of the Fingers.

I shall describe as a "movement" the total set of uscular contractions which are at any time mutually mbined, and I shall regard such a movement as nsisting of certain constituents—namely, the tions of the prime movers or agonists, of the nergists, including fixation muscles, and of the antagonists. The three movements with which we have to deal are: (1) flexion of the fingers; (2) extension of the fingers without separation; and (3) separation of the fingers and thumb.

1. *Flexion of Fingers.*—This movement involves what is perhaps the most familiar example of synergic muscular contraction. The prime movers are the flexors of the fingers and the synergists are the extensors of the wrist. The long flexors of the fingers are also flexors of the wrist. If in flexing the fingers they are allowed also to flex the wrist this action, by approximating their origin and insertions, weakens their action as flexors of the fingers. Synergic extension of the wrist therefore strengthens the grip.

2. *Extension of Fingers without Separation.*—This is a movement which occurs in such actions as sweeping crumbs from a table with the back of the hand. The prime movers are the extensors of the fingers and the synergists the extensors of the wrists, extension of the fingers flowing naturally into extension of the wrist.

FIG. 2.

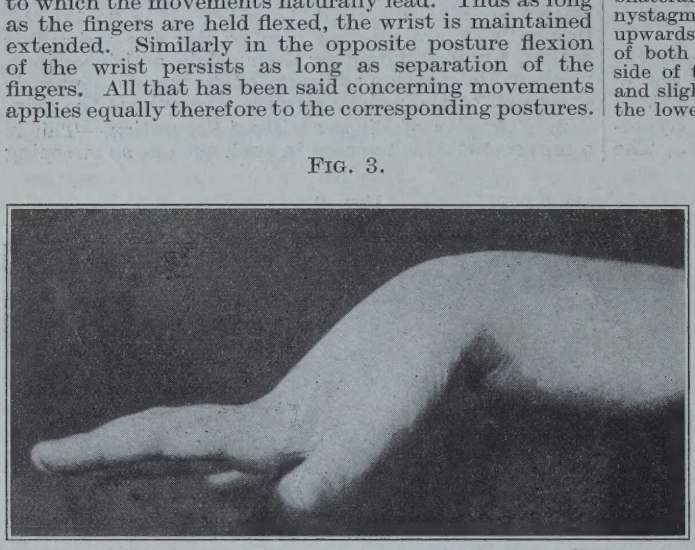


Synergic flexion of the wrist in association with separation of the fingers in a normal person.

3. *Separation of Fingers and Thumb.*—In this movement the prime movers are the dorsal interossei and the extensors of the fingers, and the abductors and extensors of the thumb. The synergists are the flexors of the wrist. This movement must be analysed in some detail, since it is the foundation of the "choreic" posture of the hand. The rôle of the extensors of the fingers as abductors is exemplified in the "trick" movement by which a patient with paralysis of all the small muscles of the hand may yet be able to abduct his fingers, provided he is not made to keep their palmar aspect in contact with a plane surface. But the extensors of the fingers are also extensors of the wrist, and unless the latter action is counterbalanced their value as extensors and abductors of the fingers is greatly reduced. This can be demonstrated by attempting to extend and separate the fingers when the wrist is maintained passively dorsiflexed. Thus synergic flexion of the wrist assists abduction of the fingers in exactly the same way as synergic extension of the wrist assists digital flexion. Consequently, while it is true that extension and abduction of the fingers with synergic flexion of the wrist is indeed the corresponding opposite of flexion of the fingers with synergic extension of the wrist, it is just as natural and physiological a movement as the latter. It is curious that Wilson should have failed to recognise this, since in the same communication in which he stresses the pathological character of the "choreic" posture of the hand he includes the following in a list of normal movements: "open closed hand; extensors of wrist relax, flexors of wrist contract."[4] In opening the closed hand this contraction of the flexors of the wrist is synergic with the contraction of the extensors and abductors of the

fingers, and is part of the very movement which elsewhere he regards as the result of a pathological "physiological shift." Fig. 2 illustrates the synergic relationship of flexion of the wrist with extension and abduction of the fingers in a normal person. The synergic relationships which exist between the muscular components of the movements we have just been considering are to be found also in the postures to which the movements naturally lead. Thus as long as the fingers are held flexed, the wrist is maintained extended. Similarly in the opposite posture flexion of the wrist persists as long as separation of the fingers. All that has been said concerning movements applies equally therefore to the corresponding postures.

FIG. 3.



"Choreic" posture of the hand in a patient suffering from a tumour of the pons and exhibiting marked hypotonia.

Relation of the "Choreic" Posture to Hypotonia.

Though the "choreic" posture of the hand is normal in its synergic pattern, its exaggeration renders it pathological, and it is this exaggeration which brings it into relationship with muscular hypotonia. Hypotonia is as characteristic a symptom of chorea as involuntary movement. To demonstrate this hypotonia clinically we have recourse to passive movement, and show that in chorea the segments of a limb can be passively displaced at the joints to a much greater extent than normally, the resistance to such displacement being much diminished. We recognise in muscle tone that state of muscular contraction which underlies posture, and which therefore constitutes a resistance to the passive displacement of a limb or its segments. In a normal person who is voluntarily relaxing his muscles this resistance is extremely slight, but its existence is proved by the occurrence of states of hypotonia, such as chorea, in which the resistance to passive movement is much less than normal. Muscle tone plays a part also in active movement. It is not necessary here to discuss to what extent the antagonists of the prime movers undergo reciprocal relaxation, for those who hold that they do would probably admit that they do not become completely atonic, but retain a residuum of tone which ensures steadiness to the movement. In hypotonic states, owing to the reduction of this tone, active movement, like passive displacement, meets with abnormally little resistance from the antagonists. Certain consequences of this are discussed by Holmes in his analysis of the symptoms of lesions of the cerebellum.[1] Here I would only point out that this hypotonia of the antagonists leads to an exaggeration of postures voluntarily adopted, since the prime movers lack the check which is exercised by antagonists of normal tone. I believe that the so-called "choreic" posture of the hand is such an exaggeration of a normal attitude. Its relationship to hypotonia is confirmed by the fact that the same attitude may be observed in patients wh exhibit hypotonia as a result of conditions other tha chorea. Fig. 3 shows a pronounced example of th attitude in a child who presented the clinical picture a tumour of the pons and who showed marked hyp tonia but no choreiform movements.

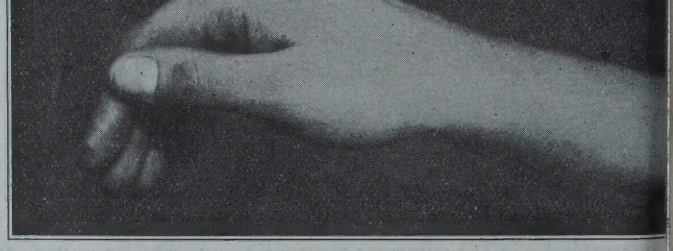
A girl, aged 11, began to suffer three years ago fro headaches, vomiting, and unsteadiness of gait. There w bilateral secondary optic atrophy of moderate severit nystagmus on conjugate deviation to either side ar upwards, bilateral weakness of the external recti, weakne of both sides of the face and soft palate, and of the le side of the tongue. The upper limbs exhibited hypoton and slight intention tremor, more marked on the right side the lower limbs were slightly hypertonic and showed son loss of voluntary power, with exaggerated tend jerks. The right plantar reflex was doubtful, th left extensor. There was no sensory loss. Th gait was ataxic.

The "choreic" posture of the hand is als frequently to be observed in hyperth roidism, in patients suffering from anxie neurosis, and in hypotonic children. constitutes a simple and readily apprec ated visible indication of muscular hyp tonia, which is of considerable value in th routine examination of patients.

Lastly, it must be noted that there is n tendency in chorea to the suppression the resting posture of moderate flexion the fingers with synergic extension of th wrist, nor of its conversion into its corr sponding opposite. The choreic patie remains capable of this attitude, as Fig. shows, and if asked to hold out the han is as likely to adopt this posture as i opposite. It is, indeed, often necessa to tell the patient to separate his finge in order to elicit the "choreic" posture.

Since the "choreic" posture of the hand is simp an exaggeration of a normal attitude produced by th muscular hypotonia and is, moreover, not associat with any suppression of the resting posture of whi

FIG. 4.



Normal resting posture of the hand in a patient suffering from chor (same patient as in Fig. 1).

it is the corresponding opposite, I cannot accept t view that it affords evidence for the existence of "physiological shift" or "abnormal function of t cortico-spinal system" in chorea. The fact that t same exaggeration of this posture occurs in oth hypotonic states renders the term "choreic postu of the hand" or "choreic hand" misleading. better descriptive term would be "hypotonic postu of the hand," which has the advantage of stating cause and indicating the conditions in which it is be found. In spite of some disadvantages this probably the most convenient description for gene use.

Conclusions.

1. The "choreic" posture, of flexion of the wr and hyperextension at the metacarpo-phalang

ints, is a normal synergic muscular relationship. It differs from the normal posture only in being xaggerated. 3. This exaggeration is the result of ie hypotonia of the antagonistic muscles, which in irn is a local manifestation of the general hypotonia ccurring in chorea. 4. The same exaggeration of is posture is to be found in other states associated ith hypotonia. 5. The "choreic" posture affords evidence for the existence of a "physiological ift" in chorea, nor of any disturbance of the cortico-inal system, being entirely explained by the hypo-nia. 6. The term "choreic posture" is misleading, id the phenomenon would be better described as the hypotonic posture of the hand."

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ON THE PATHOGENESIS OF DYSTROPHIA MUSCULORUM PROGRESSIVA.

BY KEN KURÉ, M.D.,

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I HAVE read Dr. Edwin Bramwell's Bradshaw ture [1] on the Muscular Dystrophies, Sympathetic stem, and Endocrine Glands with deep interest as nave been engaged in the study of muscular tone, ecially the trophic influence of the sympathetic ervation on the muscle; the first positive evidence this was reported at the Tokyo Medical Society in ptember, 1924. Our studies have been published ially in the *Zeitschrift für die gesamte Experimentelle edizin* since February, 1925, and Westphal [2] has ently published his opinions on the muscular strophies. I venture to present a summarised count of our investigations.

In an earlier paper [3] I expressed the opinion that ogressive muscular dystrophy may be caused by ions of the autonomic innervation of the voluntary scle. This was based upon the experimental fact at in dogs dystrophy of leg muscles was produced extirpating the abdominal sympathetic chain, and at the dystrophic changes were accelerated by ting the corresponding posterior roots at the same e. This effect of the posterior roots was found later be due to the parasympathetic innervation of the scle. Further, we found that severance of the chorda npani (parasympathetic) caused dystrophy of the gue muscles,[4] while extirpation of the cervical npathetic system produced dystrophic changes in facial muscles.[5] Especially interesting is the fact at extirpation of the ganglion ciliaire [6] produced a ical dystrophic feature in the eye muscles within out 40 days, a very short interval compared with months which experimental dystrophy took to pear in the limb muscles. In 6 patients out of 21 ose cervical sympathetic trunks had been extirpated various therapeutic purposes, we [7] found marked ophy in the trapezius, deltoid, and pectoralis major eral months after operation, and histological mination revealed typical dystrophic changes. The per arm muscles were occasionally involved, but forearm and hand muscles were always free. The son why muscular dystrophy did not appear in all operated cases may be the difference of muscular ervation in different individuals—i.e., vagotonic sympatheticotonic. In the latter class, since their scles are chiefly under the trophic influence of the npathetic innervation, the resection of this supply uces muscular dystrophy.

The conception that muscular dystrophy is induced derangement of the autonomic innervation of the scle may explain various pathological problems. cases of amyotrophic lateral sclerosis, spinal progressive muscular atrophy, and neurotic muscular atrophy, the muscles of the forearm and hand are mostly involved, while in dystrophia musculorum progressiva the muscles of the face, shoulder-girdle, and thigh are affected, but the small muscles of the hand and foot, as well as the gastrocnemius, are nearly always left intact. Babinski and Onanoff [8] tried to explain the degree of predisposition to muscular dystrophy by the degree of rapidity of muscular development. We [9] have found in rabbits, dogs, monkeys, and human corpses that the creatin content of the hand and forearm muscles is less than that of the muscles of the thigh, upper arm, and back. On the other hand, the creatin content of the diaphragm in dogs was found to rise with the increase and to fall with the decrease of sympathetic tone.[10] This fact was amply verified in the skeletal muscles.[9] Further, we [11 12] have established in human corpses that the number of sympathetic fibres—i.e., Remak's fibres—in peripheral nerve varied considerably according to the muscle innervated. According to Hatano, N. phrenicus, NN. intercostales, N. muscularis for M. pectoralis major, M. gluteus maximus, and M. quadriceps femoris contain a number of sympathetic fibres, while rami musculares for M. policis brevis and MM. lumbricales contain only a few sympathetic fibres. This fact seems to supply an important clue to the problem of the characteristic localisation of muscular atrophy in the diseases mentioned. We have already shown that, when the autonomic innervation of a muscle is left unimpaired, muscular atrophy is inhibited in the diaphragm [13] and the muscles of the tongue,[4] eye,[6] and face [14] when the motor fibres are cut. Similar results were obtained by Boeke [15] and Agduhr [16] for the eye and intercostal muscles. It is therefore easy to understand why, in the first group of muscular atrophy mentioned, the hand and forearm muscles, which have less sympathetic innervation, are affected first and most intensely. Indeed, in four cases of amyotrophic lateral sclerosis and one case of spinal progressive muscular atrophy we [3] have proved that the sympathetic innervation of the atrophic muscles remained intact. In dystrophia musculorum progressiva, however, the autonomic innervation of muscle is impaired, and the muscles which have more sympathetic innervation are affected earlier and more intensely than those which have less. The eye and respiratory muscles are evidently exceptions, because, notwithstanding their ample autonomic innervation, they are affected seldom or late. As described above, extirpation of the cervical sympathetic trunk causes dystrophy of the muscles of the shoulder-girdle, and eventually of the upper arm, while the forearm and hand muscles nearly always remain unchanged. Moreover the muscular tone and tendon reflex of the sympatheticotomised muscles decrease just as in dystrophia musculorum progressiva [5]; both the sympatheticotomised and dystrophic muscles become easily tired, but are readily restored by the administration of adrenalin, which will not, however, eliminate the fatigue of a normal muscle.[17] It is a well-known fact that a dystrophic muscle shows neither fibrillar contraction nor electrical R. D. According to Matsuura,[18] a sympatheticotomised muscle, although in a state of distinct atrophy, shows only a simple decrease of electrical excitability without any indication of R. D. or fibrillar contraction. From these numerous facts we regard it as highly probable that dystrophia musculorum progressiva is due to degeneration of the autonomic innervation of voluntary muscles.

We [3] have found, in two post-mortem examinations of dystrophia musculorum progressiva, fairly distinct changes in the sympathetic chain and sympathetic fibres in the peripheral nerves. Hitzig [19] reported many years ago a case in which he observed a marked dystrophy of the right and a slight change in the left cervical sympathetic system. It is desirable, therefore, to pay special attention to the autonomic innervation of muscles in the post-mortem examination of dystrophia. Further, in coöperation with Matsuura, I

found that extirpation of the spinal ganglion produced muscular dystrophy in the hind legs of dogs.[20] This must be due to the removal of the intermediate ganglion of the centrifugal parasympathetic fibres in the posterior root.[21]

Classification of Muscular Dystrophies.

Muscular dystrophies can be brought about by the affection at various places of the autonomic innervation of muscle. First, affection of the nerve end-plate must be mentioned. It is also possible that dystrophy may be caused by the alteration of Boeke's accessory end-platelets, although this has not yet been proved. Secondly, change in the sympathetic chain, and the sympathetic as well as the parasympathetic fibres in the peripheral nerve constitute a group to which belong Hitzig's case, two of our cases of dystrophia musculorum progressiva,[3] and muscular atrophy in six sympatheticotomised patients. Thirdly, changes in the autonomic nuclei of the spinal cord comprise a group to which belong the various cases reported by Erb [22] as dystrophies resulting from lesion in the spinal cord—i.e., the cases of W. Müller (degeneration of the anterior grey column), Dejerine (two cases of infantile spinal paralysis), Joffroy and Achard, Hitzig, Kawka (infantile spinal paralysis), Oppenheim (poliomyelitis anterior chronica), dystrophia musculorum progressiva after poliomyelitis anterior acuta; a case reported by Kaumheimer [23] (who found five similar cases in older reports), and our case.[9] As described above, muscular dystrophy occurs after extirpation of the cervical sympathetic trunk in a post-apoplectic spasm. Matsuura [18] has observed that total crushing of the spinal cord combined with extirpation of the abdominal sympathetic chain produces muscular atrophy fairly quickly, and it is therefore possible that dystrophia musculorum progressiva can be produced as a complication of a lesion of the pyramidal tract. Jendrassik [24] has reported a case of paralysis spinalis spastica accompanying muscular dystrophy.

A. Westphal [2] recently reported a case of dystrophia musculorum progressiva with the extrapyramidal symptom-complex, and suggested that the coexistence of these apparently different syndromes may be due to lesion in the mid-brain where the higher centre of the autonomic system is to be found. He is inclined to think that the higher centre for the autonomic muscular tone lies in the mid-brain, but I would suggest that the higher centre for the parasympathetic muscular tone is in the mid-brain, and actually in the hypothalamus, because parasympathetic muscular tone is not a necessary accompaniment of Parkinsonism. We are convinced, by the ample experimental evidence [23 24 25 26 27 28] which has accumulated in the last few years, that the cerebellum, and indeed Deiter's nucleus, is the site of localisation of the higher centre for sympathetic muscular tone. On the other hand, Jendrassik [24] has pointed out that dystrophia musculorum progressiva is found in association with Friedreich's disease, and gives as examples the cases of Joffroy, Dejerine, Erlenmeyer, Gowers, Mendel, and Ormerod, besides two cases of his own. Bing [29] has also reported a similar case. The autopsy of a case of Friedreich's disease which had been observed for 20 years by my predecessor, Prof. Irisawa, revealed the dystrophic alteration in muscles and the typical changes in the cerebellum (which was conspicuously small) and spinal cord. I propose, therefore, to classify such a form of dystrophy, due to the lesion in the cerebellum (the centre for the parasympathetic innervation of muscle) and mid-brain (the centre for the parasympathetic innervation of muscle), as the fourth group, which corresponds to amyotrophic lateral sclerosis caused by lesion of the motor innervation of muscle. Further, in coöperation with Matsuura [21] I found that extirpation of the spinal ganglion produced muscular dystrophy in the hind legs of dogs. This must be due to the removal of the interposing ganglion of the centrifugal parasympathetic fibres in the posterior root.

(*References at foot of next column*).

Clinical and Laboratory Notes

A NOTE ON THE LATEST DEVELOPMENT IN STEREOFLUOROSCOPIC WORK.

By F. Howard Humphris, M.D. Brux., F.R.C.P. Edin., D.M.R.E. Camb.

When Prof. Roentgen showed in Wurzburg 1897 his X ray discovery and demonstrated its val for looking within the body, it was said then hc wonderful it would be if the various shadows could shown in plastic form rather than as a flat silhouett Progress in this direction has been hampered several ways; the law governing stereofluoroscoj has not been fully recognised. The law stated simp is that angles of vision which the X rays make wi the body should be identical with those made by t vision of the observer of the body.

Among other difficulties which have retard progress is the fact that early in the days of X ra the tubes were of a size which rendered stereofluor scopy impossible. The gas tube, unwieldy in size ar uncontrollable in action, was unsuitable for stere fluoroscopy. Caldwell, of New York, struggled wi the problem in spite of other difficulties with sca success until the advent of the Coolidge tube. I fully recognised the value of stereofluoroscopy a he constructed the first workable, though imperfe apparatus for this branch of work, which was us chiefly for the localisation of foreign bodies during t war. In London during this period there was apparatus similar in principle designed for use wi coils, but difficulty arose here too, in that the tub if large enough to stand up, were too large to appro mate, and if small enough to approximate failed radi graphically. The advent of the hot cathode tube h rendered success in this direction possible, anoth assistance being the production of new scree eliminating phosphorescence. These may have fulfill their mission during the war, but were quite inadequa for the finer scientific work required in peace time f the full development of diagnostic X ray work.

The X ray diagnostician must have always had t feeling that there was something wanting, and c

Dystrophia Musculorum Progressiva: References.

(*Continued from previous column.*)

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never have felt satisfied with the flat shadow, especially in lung conditions where even the best stereoscopic plates gave an unsatisfactory result, because of the time which hitherto has elapsed between the two required exposures and the inevitable movement which must take place in it. Even the most satisfactory, accurate radiogram of the lungs only gives one position of a more or less rigid lung. With this, the most flexible of all organs, a stereoscopic vision is important—for example, in a lung with an old artificial pneumothorax, apparently cured, with a sputum free from T.B. it is important to see what adhesions there may be and in what position they are and what the flexibility is.

Other occasions for viewing moving organs, such as the duodenum for example, readily occur to one. This necessity has urged scientists and engineers to attack the problem afresh—employing new tubes, new screens, and adapting apparatus to the law governing stereofluoroscopy. Such an apparatus I have recently examined in Munich. It was exhibited in Wiesbaden in the spring of last year at the X ray congress held in that city, where it was declared that if successful it would be of the utmost importance in all future X ray diagnosis. Of this invention of Mr. F. E. Bornhardt I have made a careful examination and have seen two of them in good working order, one at Krankenhaus Rechts-der-Isar and the other at the Lungenfürsorge Anstalt in Halachin in Munich; of these I append a brief description. The apparatus consists of two specially constructed X ray tubes small in diameter placed side by side and connected with an alternating current supply in such a way that they emit X rays alternately. These impulses fall upon a fluorescent screen producing two shadow images of a body, placed between tubes and screen. The observer views the screen through a mechanical device—with a diaphragm rotating before the eyes in synchronisation with the two impulses from the X ray tubes—the result is that one eye sees the image produced by one tube and the other the image from the other tube, the physiological action of the brain combines these two pictures into one plastic impression. The movements seen on the screen appear to be continuous, as each eye is supplied with 50 pictures per second. The electrical supply is the usual A.C. and the X ray impulses from the tube and the opening of the diaphragms being of the same origin are in synchronism. A part of the mechanical construction consists of a device whereby the angle of the X rays to the body is rendered identical with that of the angle of vision, this being so whether the observer approaches the patient or recedes from him.

Having seen this apparatus when working I feel that the solution of the problem of satisfactory stereofluoroscopy has been attained.

A CASE OF SYPHILIS OF THE UTERUS.

By Hannah Billig, M.B., B.S. Lond.,
ASSISTANT CLINICAL PATHOLOGIST, ELIZABETH GARRETT ANDERSON HOSPITAL.

Very few cases of syphilitic disease of the uterus other than primary chancres of the cervix have been described. The following case, which was under the care of Miss E. Sylk at the Elizabeth Garrett Anderson Hospital, is therefore of sufficient interest to be recorded.

The patient, a married woman aged 35, was admitted in September, 1927, complaining of left-sided pain radiating down the leg. She had one child 6 years old and had had three miscarriages in January, April, and September, 1926. Since November, 1926, her periods had been regular and the loss had been normal. Previous to her marriage her periods had always been regular with normal loss. Except for rheumatic fever at 18 and an appendicectomy in 1924 she had been fairly healthy, though anæmic. There was no history of sore-throat, alopecia, or skin rashes, except for a single patch of psoriasis on her arm, present for the last five years. The husband was healthy and gave no history of syphilis. On admission general physical examination revealed no abnormality other than a palpable spleen. The uterus was enlarged and bulky. Fibroids were diagnosed and Miss Sylk performed a panhysterectomy with removal of both tubes and ovaries, as at the operation the appearance of the fibroid was strongly suspicious of sarcoma. Her recovery was uneventful.

Macroscopic Examination of the Uterus.—The uterus measured 5 in. by 4 in. by 3½ in. and showed a mass on the right side situated in the fundus and projecting subperitoneally. This mass, which was 2½ in. in diameter, had the "ham fat" appearance associated with sarcoma, but had a very irregular and angular edge. The uterine wall was much thickened, the wall of the fundus being 1½ in. thick.

Microscopic Examination.—Section of the tumour mass on the right side showed a necrosis of the muscle-fibres, bounded by a richly cellular zone showing miliary and conglomerated gummata. The myometrium was so infiltrated by lymphocytes and endothelial cells that the muscle-fibres were separated. Section through the fundus showed the myometrium infiltrated with gummata of varying size, mostly miliary. The muscle-fibres were separated by lymphocytic infiltration. The smaller vessels and capillaries were dilated and showed a perivascular collection of lymphocytes and plasma cells of varying extent, the beginnings of small gummata. The walls of the medium-sized vessels were much thickened, the medial coat showing most change. The endometrium showed slight increase in thickness. Miliary gummata were present throughout, but the reaction was much less marked than in the myometrium. Sections through the right uterine vessels showed very markedly increased thickness of the walls, chiefly of the intimal coat. The vasa vasorum were dilated and showed perivascular infiltration with lymphocytic cells. There was some increase in the subendothelial tissue. Some vessels showed subendothelial plaques with proliferation of the media and some showed almost complete obliteration of the lumen. The smaller vessels showed well-marked perivascular reaction with the formation of gummata. This reaction extended throughout the surrounding myometrium with formation both of miliary and diffuse gummata. The necrosis of the wall appeared to be due to the cutting off of the blood-supply by the changes in and around the vessels supplying this area.

Sections of the tube showed a similar gummatous reaction in the subserous and muscular coat. The larger vessels showed thickening of the media and perivascular infiltration round the vasa vasorum. The plicæ were somewhat thickened, but not adherent. There was some endothelial interstitial tissue reaction.

Sections of the ovary showed only increased fibrous tissue and corpora albicantes.

Sections were stained by the Ziehl-Neelsen method for tubercle bacilli and by the Levaditi and Fontana methods for spirochætes, with negative results. The Wassermann and the Sachs-Georgi reactions were positive in the patient, but the husband's blood was negative.

Hoffmann described the only case I could find at all similar to this.

His patient, admitted with chronic sepsis following the delivery of living twins, showed a necrotic tumour the size of an apple on the anterior cervical lip. A portion of the tumour removed for diagnostic purposes showed in section the histological appearances of a gumma. At the post-mortem examination four weeks later the right tube and ovary were found in one gummatous mass and the entire surface of the endometrium was replaced by a similar mass several centimetres thick, penetrating deeply into the myometrium. Gummata were also present in the liver and in the lungs.

Portis recorded an interesting case showing very early secondary syphilitic changes in the uterus.

His patient, aged 38, was admitted for metrorrhagia. On examination the cervix was thickened and indurated, the surface being ulcerated and covered with a greyish exudate. The uterus was moderately enlarged. Carcinoma of the cervix was diagnosed and a panhysterectomy done. The patient made an uneventful recovery, but returned seven weeks later with an extensive secondary rash. The Wassermann reaction was strongly positive. Microscopical examination of the uterus showed signs of a healing chancre on the cervix. The endometrium was diffusely infiltrated with lymphocytes and plasma cells, and this infiltration extended throughout the thickness of the myometrium, being more marked just beneath the endometrium. The left ovary showed a corpus luteum extensively infiltrated by lymphocytes and plasma cells. Sections stained by the Levaditi method showed treponemata in the cervix and the myometrium, and an occasional one in the corpus luteum and the stroma of the left ovary.

Various authors have described cases of syphilitic fibrosis of the uterus. The majority based their diagnosis of the condition on the fact that menorrhagia had reacted to antisyphilitic treatment, when the Wassermann reaction had been positive. In those

few cases where the uterus was examined arteriosclerotic changes were noted. Some deny that this is evidence of a syphilitic infection, as they found similar changes in non-syphilitic uteri.

It is interesting to note that fibrosis can occur as a late result of the gummatous condition described in this paper, and that the latter is probably preceded by the secondary changes recorded by Portis.

I have to thank Miss Sylk and Miss E. H. Lepper for permission to publish the case.

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A CASE OF STRANGULATED INGUINAL HERNIA IN AN INFANT AGED FOURTEEN DAYS.

By Maurice E. M. Jago, M.B., B.S. Lond.,
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THE following case is of interest on account of the rarity of strangulated hernia at so early an age.

The child was admitted into the Miller General Hospital on Dec. 7th, 1927, on account of vomiting and the passage of blood per rectum. It was one of twins aged 14 days and a swelling in the right inguinal region had been present since birth. Several other children in the family were likewise born with a "rupture." On Dec. 6th the parents thought the child did not seem well and on the 7th he vomited and seemed very ill. The bowels were opened before admission following the use of a soap suppository.

On admission the baby looked ill and somewhat undersized. The clothes were stained with vomit, which was fæculent in nature. Temperature 96° F.; pulse-rate, 116; respiration-rate, 44; weight, 4½ lb. In the right inguinal region was a swelling conforming more to the shape and feel of a hydrocele than to a hernia. On attempting to reduce the mass into the abdomen the baby cried violently and no decrease in size resulted, neither did it disappear when the infant was suspended by its heels. The abdomen was distended but fairly soft; visible peristalsis was seen, but no tumour could be palpated. Rectal examination revealed no tumour or emptiness in the right iliac fossa. There was blood on the examining finger and some fæces were passed.

As strangulated hernia is rare in an infant of this age there seemed some doubt as to whether the baby was suffering from an intussusception or whether the inguinal swelling was a strangulated hernia, but it was decided to explore the inguinal canal. The operation was performed under spinal anæsthesia with ½ c.cm. stovaine solution, and this successfully abolished the movements of the lower limbs. When an incision had been made over the right inguinal canal the mass was found to be a hernia. The sac was cleaned and opened and contained a portion of the ileum. The bowel was purple, but the peritoneal coat was shiny and it was evidently viable. Reduction could not be effected by taxis until the neck of the sac had been divided, following which procedure a part of the cæcum prolapsed. After reduction the neck of the sac was ligated and the conjoined tendon and the inguinal ligament approximated with sutures. The spermatic cord and accompanying structures were not defined during the operation.

The child made a good recovery and retained sterile water by mouth immediately, with no more vomiting. Breast feeding was impossible and citrated whole milk was given and received well except for constipation, which was relieved with saline wash-outs per rectum. Slight suppuration occurred in the wound which, however, healed in 12 days. The right testicle could not be palpated and its fate was uncertain; the left was normally descended. The baby gained weight steadily and weighed 4 lb. 14 oz. by Dec. 24th. He was discharged on Jan. 2nd, 1928.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF DISEASE IN CHILDREN AND SECTION OF SURGERY.

A JOINT meeting of these Sections was held on Feb. 24th, Mr. G. E. Waugh, President of the Children's Section, in the chair, to discuss the subject of

CHRONIC APPENDICITIS IN CHILDREN.

Dr. Robert Hutchison began by considering the question whether chronic appendicitis really existed in children. He did not agree with a writer who stated that in the earlier years of life appendicitis was either acute or non-existent, for the occurrence of chronic appendicitis had been proved by exploration; nevertheless he believed that it was rare under 14 years of age. Another question was whether the chronic condition always arose out of an acute attack. If so it should be possible to learn of an illness which might have been acute appendicitis, but such a history could not always be obtained. There was the chance that an acute event had been passed over as of no consequence or had been mistakenly regarded as stomach trouble or a "bilious attack"; but, on the other hand there seemed to be no *a priori* reason why a primarily chronic inflammation of the appendix should not occur, just as tonsils might be chronically inflamed although there was no history of acute tonsillitis.

Granted the existence of chronic appendicitis in childhood, what were the symptoms and signs by which it could be recognised? In the adult appendicitis might simulate gastric disease, but he did not think "appendix dyspepsia" occurred in childhood in the young the condition was more apt to simulate an affection of the colon. In the clinical picture presented by chronic appendicitis in childhood the cardinal feature, in Dr. Hutchison's opinion, was recurrence of episodes of abdominal pain, either with or without vomiting and slight fever, lower abdominal pain being the most constant and important. Fever might be either slight or absent, and if the patient happened to be seen between attacks there might be no physical signs. If pressure over McBurney's point caused pain at that spot and there was no tenderness elsewhere, it was suggestive of appendicitis, especially if the pressure caused pain which was referred to the epigastrium; but this sign could be elicited with confidence in only a few children. Pain confined to the right iliac fossa he believed to be but rarely due to chronic appendicitis, but if the pain came on after exertion, rather than after a meal, it suggested appendicitis. If the patient happened to be seen during an attack the diagnosis became easier, as there should then be tenderness, perhaps rigidity, on palpating the right iliac fossa, though it must not be forgotten that these signs might be due to inflamed glands. Radiography, he thought, could not determine the diagnosis; indeed it might only add another element of doubt to an already doubtful situation.

Among the conditions which might simulate chronic appendicitis in childhood were: other organic conditions in the right iliac region, such as enlarged glands; kinking of ileum or appendix; a mobile cæcum; and an adherent Meckel's diverticulum. He did not think they could be reliably distinguished from chronic appendicitis, nor from one another except by exploration. Obstruction of ureter by stone should be detectable by radiography and by expert examination of the urinary passages and of the urine. Pelvic affections in girls could be diagnosed usually by bimanual examination per rectum, under anæsthesia if necessary. Ovarian pain at about puberty for which no organic basis could be found usually ceased with the regular onset of menstruation. Intestinal colic was very common in childhood, and was sometimes

accompanied by vomiting. Sometimes colonic pain could not be distinguished from that of appendicular origin. Often the pain was referred to the umbilicus and was for this reason sometimes called "umbilical colic." The more frequent the pain and the closer its onset was related to meals the less likely was it to be due to chronic appendicitis. But Dr. Hutchison thought a long and adherent appendix might play a part in disturbing the colon. Often, too, slight attacks of acute appendicitis were mistaken for "bilious attacks." Some surgeons appeared to think that cyclical vomiting could be cured by removal of the appendix. His own view was that true acidosis, with recurrent vomiting and perhaps fever, and the presence of acetone bodies in the urine, were of hepatic origin. These cases could be distinguished from acute appendicitis, too, by the great predominance of vomiting and by the comparative absence of pain. Still the same kind of child was subject to both conditions. In many cases the diagnosis of chronic appendicitis in the child was more or less conjectural. In his own practice, when everything discoverable seemed to point to chronic appendicitis, what he advised was not appendicectomy, but exploration of the right iliac region. He specially advised this if the child was being sent to school where surgical help would not be readily obtainable, if the parents were worried lest appendicitis should occur, and in cases in which there was a strong family history of the disease. In most of the explored cases appendicitis had not been the cause of the symptoms, but the surgeon had seldom drawn a blank; he often found a kink, or enlarged glands, or a constricting band.

Surgical Points of View.

Mr. A. J. WALTON said that in most cases of so-called chronic appendicitis there was an atonic condition of the cæcum associated with virginal ptosis. Of 906 cases of appendicitis uncomplicated by any other lesion, 601 were acute and 305 chronic. In this series 186 of the patients were under 14 years of age, but in only 33 was the condition chronic. The mortality of acute appendicitis in childhood was still too high. It was well known that it was difficult to obtain a complete history in the case of young children; therefore an account of any bout of severe pain and vomiting should be taken seriously, especially if followed by localised signs of appendicular trouble. In five of his cases the lesion found was a subacute or chronic inflammatory change in the mesenteric glands, especially those at the ileo-colic angle. In five cases of visceroptosis in girls aged 13 there had been frequent attacks of pain in the right iliac fossa and lower abdomen, but without the formation of an inflammatory mass. In four cases with symptoms suggestive of appendicitis threadworms were found in the lumen of the appendix. He had not met with any cases of appendicitis in children in which the condition had been chronic from the beginning.

Mr. H. W. CARSON said he had no doubt, from his own experience, that chronic appendicitis occurred in children, but there were important respects in which it differed from the same condition in the adult. He agreed with Dr. Hutchison that the so-called "appendix dyspepsia" did not occur in children, neither did they suffer from symptoms of visceroptosis, though they might be found to have a mobile cæcum. In children it was common to find the appendix in the "5 o'clock position"—a dangerous position, as the appendix was hanging over the pelvic brim. Threadworms in the appendix produced chronic appendicitis, rather than an acute perforative lesion. With regard to the presence of glands in the ileo-cæcal mesentery, he had concluded, as the result of a good deal of study, that these glands were not tuberculous at the outset; he believed that originally they were chronically inflamed, and that subsequently the tubercle bacillus found a congenial habitat in them, owing to their low resistance. He regarded infection of these glands in the mesentery not as a part of a systemic infection, but as a local one, probably due to ingestion of tuberculous milk. In the majority of cases he thought enlarged glands in this region could be differentiated clinically from appendicitis, and in making the diagnosis he laid most stress on the character of the attacks; though periods of pain might occur repeatedly, it was not continuous as it was in appendicitis. He agreed that in children the difficulty was to get an unequivocal history of acute attacks of appendicitis preceding the more chronic condition.

Doubts and Criticisms.

Dr. G. A. SUTHERLAND expressed himself as still uncertain whether chronic appendicitis existed in children, though admittedly if an attack of acute appendicitis had been skilfully treated by the physician adhesions might have formed and produced symptoms which some might term chronic appendicitis. That, however, was not what was usually understood by the term. He did not agree with Dr. Hutchison that a child should be operated upon because the parents were over-anxious about appendicitis, nor did he think there was evidence of appendicitis being a familial complaint. He would rather allow such a child to play about with other children and watch the result, as in doubtful cardiac disease, giving at the same time a full diet.

Mr. WARREN LOW hoped that Dr. Sutherland's ideas would not be accepted. He spoke of two members of a family of three dying of acute appendicitis, the third nearly succumbing to the same complaint. He had always felt convinced of the presence of chronic appendicitis in children. Some appendices, when exposed, were stiff and chronically inflamed; indeed they seemed to be almost composed of erectile tissue. He believed that chronic inflammation of the ileo-cæcal glands had a definite relationship to the state of the appendix.

Dr. A. CAWADIAS did not agree with the division of appendicitis into acute and chronic; he believed it made for clarity to speak of the acute stage as paroxysms of an otherwise chronic state of inflammation of the region. If such a conception were prevalent he thought there would be less temporising, which so often led to disaster. Still, there was little doubt that many unnecessary operations were carried out for the condition. Observation with the iridescent screen, combined with palpation of the appendix region—especially the point of its insertion—was a valuable aid to diagnosis.

Mr. L. E. BARRINGTON-WARD said that what Dr. Hutchison referred to as chronic appendicitis he personally preferred to regard as recurrent appendicitis. No sane surgeon would operate for acidosis under the belief that it was appendicitis. He did not think that visceroptosis was ever found in a child. He agreed that when there occurred chronic attacks of disease, such as several speakers had mentioned, exploration should be carried out.

Dr. A. G. MAITLAND-JONES declared himself also a sceptic on the subject of chronic appendicitis in childhood. He agreed with Dr. Hutchison that in some cases it was desirable to "treat" the parents, especially as an exploration might prevent a catastrophe.

Two Forms of Chronic Infection.

The CHAIRMAN pointed out that when examining the abdomen of a child who was not suffering from acute appendicitis it was impossible to predict what was the intimate cell structure of the particular appendix. The pathologist would in many cases say, on its removal, that there was no evidence of inflammation, but he supplied no test which allowed the clinician to decide on the nature of the condition present. Mr. Waugh drew special attention to two types of chronic inflammation. One was a primary tuberculous infection of the appendix, which, in his experience, was more common when the appendix was in a hernial sac than when it was in the abdomen. It attracted attention by the intensity of the pain, unassociated with toxæmia, and if there was no spread by miliary tuberculosis to other parts of the

peritoneum, the condition could be cured by removing the grossly tuberculous appendix. The other condition was invasion of the appendix by streptothrix, and this constituted one of the most disastrous traps to be met with, as there were no abnormal signs suggestive of primary abdominal disease. The evening temperature might reach 106° F., dropping in the morning to 99°, the only accompaniment being a vague abdominal discomfort, and after several weeks a small circumscribed tender swelling appeared, giving an impression that the appendix was encapsuled. A few days after removal of the appendix, however, the patient seemed worse, and a glistening substance might be observed in the affected area, as if a snail had crawled over it.

Replies.

Dr. HUTCHISON said he was prepared to accept Dr. Cawadias's definition of so-called chronic appendicitis. With regard to observation with the iridescent screen he still felt it must be difficult to distinguish a tenderness which was due to glands from that due to the appendix itself. He did not think that even the leucocyte count would make diagnosis certain. He certainly did not agree with Dr. Sutherland that in doubtful cases one should get the child up and out of bed, to see what happened; what might happen was perforation of a gangrenous appendix. The heart did not furnish a parallel case, for a heart had great power of recovery if tried a little too far. To explore the appendicular region in the doubtful cases in which the parents were very anxious was not only of benefit to the parents, but also had a good reaction through them on the child.

Mr. WALTON said he had not seen threadworms in acute attacks; usually they were harmless passengers, but in the cases he had mentioned the symptoms cleared up after removal of the appendix. Often, he agreed, enlarged ileo-cæcal glands were not primarily tuberculous. Adhesions which formed after operation for appendicitis showed a natural tendency to disappear later.

SECTION OF EPIDEMIOLOGY.

A MEETING of this Section was held on Feb. 24th, with Dr. L. S. MONCKTON COPEMAN, the President, in the chair, when Dr. REGINALD MILLER read a paper on

SOME PUBLIC HEALTH ASPECTS OF JUVÉNILE RHEUMATISM.

The incidence of heart disease showed, he said, that rheumatism occurred in 1·5 to 2 per cent. of urban elementary school-children. Its depredations were best studied in this class, but there were two difficulties in estimating its amount. First, heart disease was much commoner in school "leavers" than in school "entrants," and, secondly, the disease was more common in urban than in rural children. Probably the figure for entrants was about 1 per cent., and for leavers between 2 and 2·5 per cent. There was little evidence of the incidence in secondary schools, but at the Polytechnic School in Regent-street 1·53 per cent. of the 600 boys showed rheumatic heart disease in the years 1924–26. An interesting fact was that of the fee-paying boys only 0·98 per cent. had cardiac trouble, while the figure was 2·57 per cent. for those entering with scholarships from elementary schools. It was difficult to estimate what proportion of the 60,000 deaths annually attributed to heart disease were really due to rheumatism. In hospitals the proportion was about 50 per cent., but Dr. Miller thought it safer to put the figure at 20,000. Coombs had estimated that about five years of increasing invalidity preceded every death. Under the age of 2 rheumatism was practically unknown; from 2 to 5 it was uncommon, and the maximum incidence occurred between 7 and 8. At puberty the disease began to change to the adult type. The factors governing the age-incidence were, in Dr. Miller's opinion, chronic tonsillar infection, the less protected régime of school life, and childhood's diminished resistance to infection. The upper limit of the class incidence was well seen in the absence of the disease from private schools and its rarity in private practice. The lower limit was less definite but very interesting; the real rheumatic stratum lay in the upper section of the poor. The class incidence showed that the onset of the disease was not entirely governed by overcrowding, underfeeding, dirt, or the other accompaniments of semi-destitution. Clinical workers were convinced that the disease did not spread from case to case.

The Environmental Factor.

When London poor children were taken away from home and put in country residential schools rheumatism was unknown among them. This fact urgently needed explanation. Inheritance, at the most could only aid and abet environment. The special factor, the speaker believed, was damp dwellings. Damp predisposed to catarrhal colds and so might affect the tonsils. The disease was commonest in cold, damp countries, and the sites of the homes of rheumatic children tended to be on low-lying areas and to follow water-courses. Recent investigations had shown that about 60 per cent. of rheumatic children were living in obviously damp rooms. The proportion of a series of non-rheumatic families living in damp rooms was only 30 per cent. It was the condition of the house rather than of the site that was important; rheumatic and non-rheumatic areas might lie side by side. In Eton town there was plenty of juvenile rheumatism; in Eton College none. This factor explained why the poorest people of all suffered less, for overcrowding meant more warmth and less damp. Notification was worthwhile, as it gave a keen medical officer of health the chance to deal with unhealthy houses. An urgently needed reform was adequate warming and drying of children who arrived at school wet. School "inspections" must be turned into examinations, but treatment should be left to practitioners and hospitals.

Dr. J. TERTIUS CLARKE read a paper on the

PATHOGENESIS OF RHEUMATIC FEVER IN ITS CLIMATOLOGICAL RELATIONSHIP TO A POSSIBLE INSECT CARRIER.

He pointed out that during more than 30 years' service in the Malay Peninsula he had not seen a single case of rheumatic fever, chorea, or subcutaneous nodes. Inflamed tonsils were as common in the tropics as in England. The very few cases reported from the tropics were not true rheumatic fever. The common rat flea, *Ceratophyllus fasciatus*, had also not been found in the tropics, its upper temperature limit lying at about 70° F. It flourished in a humidity of 70 per cent. The environmental conditions favouring the fever also favoured the rat flea. The evidence that a bacillus caused rheumatic fever was not convincing, and he suggested that the disease might be due to a protozoon carried by the rat flea. Protozoa-like rheumatic fever but unlike bacilli, were unevenly distributed over the world, and the lesions of the disease were formative and proliferative rather than exudative. The slight leucocytosis of the fever was mononuclear.

The Case against the Dampness Factor.

The PRESIDENT said he had seen in country villages conditions of dampness far worse than anything in towns, and he felt that Dr. Miller's suggestion required further investigation.

Dr. J. A. GLOVER said that he feared Dr. Miller's arguments were not so watertight as the houses he would like to see. He thought that the placing of highest incidence in the upper stratum of the poor was due to the fact that the principal investigator had worked in the more prosperous parts of the town. The figures published in the Medical Research Council's report showed that the difference between the poor and the very poor was not great enough to be significant, and what evidence there was went the other way. Moreover, the really destitute mother would not take her children to clinics; she waited

till they were really ill and then took them to the infirmary. He showed a table of the children in the infirmaries of London; Poplar had 98 children under 15 suffering from acute rheumatism, and Marylebone only 10. The work of Carsdale in the Isle of Dogs and Homerton in 1911 had shown that an enormous proportion of really destitute children were rheumatic, and workers in New York had pointed out the marked effect of malnutrition. Familial incidence had been strikingly brought out by the researches of Mrs. Forest Smith. The high rate at the Royal Naval School at Greenwich (S. F. Dudley) showed the ill-effects of overcrowding on picked boys. The map published by Dr. Matthew Young showed that the mortality-rate was lowest of all in the Ouse and Cam valleys, where sanitary authorities were backward, and there were plenty of damp houses on damp sites.

Dr. F. C. SHRUBSALL described work done by his wife, showing a very definite association between rheumatism and water-courses. Aliens had been found to be much less affected in the same areas. The worst houses were always in the valleys, and it might be that new houses were damper in themselves. Where an old area had been cleared and rebuilt, as in the Wandle valley, there was high incidence. He pointed out that the school medical inspection was no procession past a point, but a thorough investigation.

Dr. J. NAIRN DOBBIE also described the carefulness of the examination and after-care of school-children. Of 100 cases he was analysing 35 came from very poor slums and 60 from very poor homes verging on the slum type. Rheumatism, in Dr. Dobbie's opinion, was essentially a poverty disease, and reflected the degree of poverty to a very great extent. Sixty-six per cent. of his cases showed a clear and immediate family history of rheumatism, and in a further 11 per cent. the disease appeared in the immediate collaterals. Although environment was the immediate cause there was a definite diathetic factor. The tonsils were defective in 80 per cent. of cases, but in no case was the child of the typical adenoid type, and it was not the catarrhal child who developed rheumatism, but the nervous, highly strung, psychasthenic type. The future of school medicine lay in the improvement of environment at the "pre-school" stage, between the ages of 2 and 5, as many of the children entering school at 5 were recognisably "pre-rheumatic."

Dr. WARREN CROWE suggested that rheumatic infection might be conveyed by the immune adult to the susceptible child through the nurse's habit of tasting food from the child's spoon.

Dr. DAVID NABARRO suggested that information might be gained by following up for several years the children whose tonsils had been removed at hospitals, and that it would be worth while to test the biochemical reactions of the tissues of the rheumatic child and his brothers and sisters and see if they differed from those of the non-rheumatic child.

Dr. MILLER, in reply, said that statistics of rural children were so inadequate as to be unreliable. Dr. Dobbie's figures proved nothing but that a large number of very poor children suffered from rheumatism. The only really satisfactory test was the geographical one, over a circumscribed area in one district. This had only been applied by Mrs. Shrubsall and in Birmingham, and both researches had shown that rheumatic and poverty areas did not properly correspond. He begged the public health authorities to bridge the great gulf between clinical and bureaucratic medicine and to build upon the foundations laid by clinicians in this matter, and not start de novo and waste years of work.

Dr. CLARKE, in reply, said that practically every environmental factor mentioned that evening was common to the rat flea and to rheumatism. The rats lived along rivers and in crowded residences. The rat flea was rife in Lancashire and Yorkshire, and very rare in the Eastern counties.

MEDICO-LEGAL SOCIETY.

DISCUSSION ON THE INFLUENCE OF PARTURITION UPON INSANITY AND CRIME.

A MEETING of this Society was held on Feb. 23rd with Sir WILLIAM WILLCOX, the President, in the chair, when Prof. LOUISE MCILROY read a paper on this subject, which we published in full last week, p. 379. A long discussion followed.

Mr. Justice HUMPHREYS said that the best answer to the critics was that no jury in this country had ever yet convicted a woman in the circumstances suggested by Prof. McIlroy. The verdict "Guilty but insane" amounted in law to one of "Not guilty, but the prisoner should be detained until His Majesty's pleasure is known." English law would never be logical, but the English people had an extraordinary capacity for doing justice by perhaps illogical means, and the practice of leaving the question of insanity to the jury did in fact result in justice being done. The rules in McNaghten's case were not particularly logical, and might admit of amendment, but the speaker doubted very much whether they acted unjustly on persons who had committed crimes when insane and therefore not responsible. It was important not to include in Acts of Parliament anything that might help the criminal to escape. Juries tended perfectly naturally to take advantage of any circumstance that might enable them to acquit when the penalty was a very serious one, and they should not be assisted to go wrong in this direction. This was the difficulty in the way of altering the language of the Infanticide Act in the direction suggested. The Act was probably unnecessary, except to prevent the horrible farce of a judge assuming the black cap and sentencing to death a person who, as he and everyone else knew, was not in the least danger of being hanged and who would probably be released in a few weeks. If, however, the Act was to remain, there should be a definition in the next Act of what was meant by "newly born." It might be possible to omit the phrase altogether and leave the question of responsibility to the jury; the only objection the speaker saw to this was that it might encourage the type of medical witness who was always prepared to come forward and swear that the accused was suffering from whatever disease would entitle him or her to acquittal. In answer to a comment by Lord Riddell, Mr. Justice Humphreys explained that the House of Lords had explained that the prisoner, found "Guilty but insane," was found guilty of having done the act which in a sane person would amount to the crime with which he was charged, but not guilty of having committed any crime. The difficulty lay in the fact that there was no adjective in the language which would convey this precise meaning.

Lord RIDDELL said that the man in the street regarded a verdict of "Guilty but insane" as a verdict of "Guilty of murder but insane," a mistake that would be avoided if the law were altered as the learned judge and Prof. McIlroy had suggested. As he understood the law, it was the duty of a judge, when a delusion or "irresistible impulse" was pleaded and the facts were proved, to direct the jury to return a verdict of guilty. This Act had been admitted to Parliament in a most perplexing form. An amending Bill in the form suggested would be very useful and a great relief to lawyers, who now had to enforce a law which was understood by no one.

Dr. F. J. MCCANN suggested that "newly born" should mean not more than 24 hours old. In the first 24 hours an unmarried woman might temporarily lose her reason through the agony of despair. It was at that time that animals ate their young, but later on the condition of affairs was quite different. Unless this limit were imposed, some medical men would always be ready to swear that a woman's crime was

due to her confinement—even two years afterwards. In a sense some women never recovered from confinement. There was no essential difference between the stress of lactation and any other stress that might cause insanity. This limit would distinguish the particular type of case from the remainder, which were adequately dealt with by the law relating to insanity. Steps should be taken to ensure adequate legal defence for poor prisoners charged under this Act, and expert post-mortem examination of the corpse of the child. To send organs or parts of organs did not give pathologists a fair chance.

Dr. C. HUBERT BOND foresaw confusion of the issue by the nomenclature suggested. Such terms as puerperal and lactational insanity were misleading. Another source of confusion lay in using such terms as "insanity," "psychosis," "mental disorder," "abnormal mental state," and "disturbed balance of the mind" without being sure how far, if at all, they were intended to be synonymous. Precision here was of vital importance if the two professions were ever to reach mutual understanding or agreement. The McNaghten rules were beside the point in a discussion on the Infanticide Act. A woman might be punished as guilty of manslaughter when, but for the Act, she would have been found guilty of murder; she became a murderess in the eye of the law and could not be sent to an asylum. In passing, Dr. Bond registered a caveat against regarding detention in Broadmoor as either being or intended to be a punishment, and against the use of the word "incarcerated" in referring to any institution for mental cases. The Infanticide Act, he said, absolved the court from an unpleasant duty, but did not absolve the woman from more than the ordeal of hearing herself sentenced to be hanged; it stigmatised and punished her as a felon. There would be no need, either biological or sentimental, for the Act if we could get rid of the McNaghten rules and of the tendency to regard the evidence of all medical practitioners, expert in psychology or not, as of equal weight. By providing the court with an escape from a false position the Act had delayed still further the attainment of unity of thought on these matters. The necessity for its improvement was obvious. The use of the undefined phrase "newly born" was particularly illogical and short-sighted. The woman might, in that abnormal mental state, kill an older child, or the child of other parents whom she had befriended.

Dr. J. S. FAIRBAIRN said that crimes committed in a state of puerperal and lactational insanity should be looked on from a totally different aspect from those due to the actual stress of delivery. The time during which the stress of parturition might lead to crime was a matter of days only, and the woman who was insane was already protected. In considering how long delivery should be a factor one had to recognise the enormous difference in the temperament, constitution, and circumstances of individual women. A week or ten days might be regarded as a fair period.

Sir HERBERT AUSTIN said that the case of Mary Donoghue had nothing to do with the Infanticide Act. She had been discharged from the infirmary completely cured and had gone back to her regular work; the crime had had nothing to do with her condition. The verdict of "Guilty but insane" was not a verdict of "guilty," and there was no appeal against it. In support of confidence in the jury's discretion he mentioned the case of a woman who had been tried twice on the charge of child murder and found guilty but insane by reason of her confinement. The question of the defence of a poor prisoner might be left quite safely to the presiding judge.

Dr. HALLIDAY SUTHERLAND pressed for the deletion of the term "newly born." If the woman were insane, the provisions of the McNaghten ruling covered her case completely. He objected to the verdict "Guilty but insane." Murder was still, in Lord Coke's terms, "with malice aforethought taking the life of a reasonable creature in being," and of that the prisoner was convicted. To be logical the verdict should be "Not guilty but insane, and therefore worthy of detention." He understood that the form of the verdict was due to Queen Victoria, who had been unable to understand how any person who threatened Her Majesty's life could be "Not guilty."

Dr. MORGAN FINUCANE objected to the verdict because it resulted in women who were not responsible for their acts being shut up in Broadmoor. He pointed out that childbirth of itself imposed a strain much greater than any other crisis, and was likely to lead to abnormal conduct quite apart from puerperal insanity.

Dr. GRAHAM GRANT gave an example to prove that patients were released from Broadmoor as from other mental hospitals as soon as they were fit to be at liberty.

Dr. NORWOOD EAST agreed that, although the law was illogical, in practice justice was done. Fatherhood equally with motherhood was a necessity for the race, and fathers were sometimes tried for killing their children and found insane. One of the contributing factors in such a case was the stress of providing for their families, and it would be difficult for juries to draw a distinction between motherhood and fatherhood.

Mrs. MARIE STOPES said that the various attempts to define "newly born" were illogical unless they limited it strictly to 24 hours, which seemed harsh and out of the spirit of the Act. Since the distress and strain were apt to persist after the mother was up and about, she would like to suggest that the Act should extend until the child was weaned.

Dr. H. R. OSWALD agreed that there was no need for the term "newly born"; any interpretation beyond 24 or 48 hours made the word absurd.

Dr. REGINALD WORTH said that in his experience 75 per cent. of the women committed to Broadmoor for killing their children had done so during the lactation period, and that insanity occurring after childbirth was equally divided between the puerperium and lactation. If a woman killed her child during either period her confinement must have been a contributing cause. The emotions that a woman suffered during gestation could not be eliminated in a few hours. The period should extend until the child was weaned, and, since the mere fact of a mother, with her maternal instincts, killing her child showed that she was insane, it should be for the prosecution to prove to the contrary.

Prof. MCILROY, in reply, amplified Dr. Finucane's plea for the mother. Childbirth was so great an ordeal, even to the most normal woman, that its effects on the mind could not be classed with any other form of mental disorder. She read the following extract from a letter from Lord Justice Atkin, to whom she had sent a copy of her paper:—

"I agree with you that either the expression 'newly born' should be defined in time or the protection to the mother should extend as long as (perhaps within a time limit) she has not fully recovered and the balance of her mind is still disturbed. But this does not really affect the question of puerperal insanity unless the second alteration above is adopted and made wide enough. The kind of case you have in mind is exactly the class of case our committee were thinking of when we suggested an amendment to the law of criminal insanity of wholly uncontrollable impulse due to mental disease. The latter qualification would denote what you call insanity. The only criticism I have to make on your paper is that you seem to accept the Lord Chief Justice's criticism on this as possibly just, and then go on to prove that it isn't. The answer that may be made is that in practice, whatever the rules in the McNaghten case say, a woman such as you describe would be found guilty but insane. I think you may take it that this is generally true. Your juries and judges are often more humane than loyal, but it has always seemed to me to be a reproach to the law that it can ever be reasonable in practice only by being violated in theory. I hope in reply you can emphasise what you say in your paper that in the case you refer to the woman knows what she is doing and knows that it is wrong but (*a*) does the act from an impulse which she cannot at all resist, and (*b*) is at the time insane or suffering from mental disease."

HUNTERIAN SOCIETY.

At a meeting of this Society held on Feb. 27th, Mr. A. MORTIMER WOOLF, the President, being in the chair, Dr. ANTHONY FEILING delivered the Hunterian Oration on

SCIATICA: ITS VARIETIES AND TREATMENT,

a subject which was justified, he said, by the aggregate of suffering and disability lost through this common disorder. Unfortunately the term had been accepted by the public to designate almost any kind of pain in the region of the lumbar spine, buttock, hip, or leg, but sciatica should be thought of as merely signifying pain in the distribution of the sciatic nerve. It was convenient to speak of a secondary or symptomatic sciatica due to some gross pressure lesion and a primary or essential sciatica the exact ætiology of which was a matter of doubt and dispute. The part played by the fifth lumbar nerve in the production of symptoms was clinically important and was accounted for in part by its long oblique course to the plexus.

Secondary Sciaticas.

Secondary sciatica might be due to many lesions, including tumours of the rectum, pelvic organs, pelvic bones, or vertebral column; disease of the hip-joint, sacro-iliac joint, or joints of the lumbar spine; affections of the roots of the cauda equina, such as syphilitic inflammation; and the effects of old injuries and disease of the spinal cord—for instance, tabes. Physical examination must in all cases include the vertebral column, hip-joint, abdomen, nervous system, rectum, and sometimes pelvis. Gross pressure lesions were not common, but osteo-arthritis of the hip was often overlooked. Careful passive movement should not produce pain in the hip in true sciatica, nor should there be any real limitation of movement. Radiography was essential. The following symptoms should at once seriously invalidate a diagnosis of primary sciatica: pain extending to the anterior aspect of the thigh, perineum, groin, genital organs, abdomen, or abdominal wall; motor paralysis of leg or thigh or a dropped foot; loss of knee-jerk; marked muscular atrophy; reaction of degeneration in any muscles; severe vaso-motor disorders, œdema, or trophic ulceration; interference with the nervous control of micturition, defæcation or the sexual functions; lordosis or gross deficiency in the movements of the spine; and, finally, the history of an operation for malignant disease. Bilateral pain should excite grave suspicion, but it was possible for an essential sciatica to affect both sides.

Primary or Essential Sciatica.

Primary sciaticas were usefully divided into two groups: those where the symptoms suggested a true neuritis and those where the trouble seemed to lie in the region of the lumbo-sacral vertebræ. The true neuritis was an interstitial neuritis or perineuritis, and its precise ætiology was generally uncertain. This form occurred frequently in diabetic subjects. It was a good practice to seek and remove foci of sepsis, but the speaker confessed to little success from this line of treatment. The sensory functions were affected almost exclusively, presenting a strong contrast to the effect of pressure, where early sensory symptoms were soon followed by motor disturbances. Except in very severe or long-standing cases muscular wasting in primary sciatica was very slight and more or less global (i.e., affecting all the muscles of the limb equally). Kernig's sign would cause pain in many conditions where the nerve or its roots were affected by pressure or inflammation. The simplest test for real neuritis was tenderness on direct pressure, most easily elicited over the sacrosciatic notch and midway between the tuber ischii and the great trochanter. Sometimes it was also found in the popliteal space and over the external popliteal nerve at the head of the fibula. Mere discomfort was insufficient for diagnosis; the pain elicited must be acute. Another almost invariable sign of real neuritis was the disappearance of the ankle or Achilles jerk, often associated with exaggeration of the knee-jerk. The ankle-jerk might never return after an attack.

Juxta-vertebral Sciatica.

When secondary sciatica and true neuritis had been excluded there remained a large number of cases of uncertain nature, with practically no tenderness of the nerve and sometimes without loss of ankle-jerk. The pain tended to radiate, especially in the area of the fifth lumbar root; it was uncommon to find it on the sole or calf. The lesion was probably vertebral or juxta-vertebral. Scoliosis was often associated with sciatica, especially with the obstinate and chronic cases, and was most commonly of the contralateral type. With it were found rigidity of the lumbar spine, defective movements in all directions, and often a firm contracted condition of the erector spinæ. This form of scoliosis was due to a muscular reflex contraction, tending to produce enlargement of the intervertebral foramina on the side of the sciatic pain. When the scoliosis was homolateral, lessening tension on the nerve of that side, it was cured by saline injection into the nerve, suggesting that the lesion was probably a neuritis of the sciatic trunk. Much less common was an alternating form of scoliosis, believed by Putti to be due to bilateral arthritis of the lumbo-sacral joints, with need to rest first one side and then the other. Sicard classified neuralgic pains as due to lesions of the posterior root within the theca—"radiculitis," or between the ganglion and the origin of the nerve plexus—"funiculitis," or of the nerve plexus or trunk. Since funiculitis occurred in the intervertebral foramen, Sicard had coined the term "névrodocite" or "neurodocitis" of it. Apart from syphilis, herpes zoster, and spinal meningitis, the lesion within the subarachnoid space was not common. A unilateral neuralgia was more likely to be a funiculitis than a radiculitis, and in the latter a lymphocytosis of the cerebro-spinal fluid was found, while in the former there was a characteristic increase in protein without any increase in cells. This increase might be as much as 0·1 per cent. in sciatica. Putti [1] had made a useful distinction between "central" and "peripheral" sciaticas, the former due to vertebral lesions and the latter to neuritis or perineuritis.

Why is Sciatica Common?

The anatomical peculiarities of the lower lumbar region accounted for the frequency of "central" sciaticas. The last two lumbar intervertebral foramina were the smallest in the body and the fifth lumbar was peculiarly liable to congenital variations which might alter the size of the intervertebral foramen; it was, moreover, the "foundation stone" of the whole spinal column. Dr. Feiling had been unable to confirm Putti's statement that a spinal arthritis could always be demonstrated radiographically in central sciaticas. Even, however, when the sciatica had been ascribed to a lesion of the root or roots in the intervertebral canal the discovery of a cause for this arthritis was often hard. Foci of infection must be sought, and the possibility of an old gonococcal infection must not be forgotten.

Sacro-iliac Strain.

Dr. Feiling believed that disease of the sacro-iliac joint was a rare cause of sciatica, although minor inflammatory infections would be very difficult to detect. Hoyt Cox had distinguished two types of sacro-iliac subluxation, a traumatic and a postural form. In the second type, he maintained, sciatic pains were likely to be present, associated with undue prominence of the sacrum, rigidity of the spinal muscles, obliteration of the normal lumbar curve, lateral curvature of the spine away from the affected side, and marked tenderness on pressure over the joint. Trauma was not, however, confined to the sacro-iliac joint, said Dr. Feiling, and might well affect the lumbo-sacral spine and cause sciatic pain.

[1] THE LANCET, 1927, i., 53.

Muscular and ligamentous injuries might produce scar tissue with implication of nerve-fibres.

Treatment.

The treatment of the secondary forms was clearly that of the causal factor. In cases of neuritis or perineuritis rest in bed was nearly always essential, but splinting could seldom be tolerated. Heat was undoubtedly the best local palliative, whether achieved by poultice, fomentation, radiant heat, or diathermy. Ultra-violet rays were also useful. He had been little impressed by electricity. Milder cases might benefit from counter-irritation by liniments, ointments, or blisters, or by painting with strong hydrochloric acid. In the early stages of an acute neuritis massage was definitely contra-indicated. Innumerable drugs had been used, either as "cures" or to relieve pain. Any amenable condition, such as constipation or urinary infection, which might be a factor in causation, must be promptly treated. Salicylates and iodides had direct effect, but the intravenous injection of sodium iodide had no advantage over oral administration. Of analgesics dialacetin and allonal were of value, and particularly useful was a cachet containing aspirin grs. v., pyramidon, or amidopyrin, grs. v., and heroin, gr. $\frac{1}{4}$ or $\frac{1}{8}$. In really bad cases the temporary use of morphia was almost imperative. Cases of sciatic neuritis which did not yield in two or three weeks might be treated with saline injection into the nerve trunk; about 100 c.cm. should be used and the temporary pain controlled by a quarter of a grain of morphia. Injection of oxygen was also of value. Stretching the nerve by forcible manipulation was probably not of much use; in a very few highly intractable cases it might be justifiable to cut down on the nerve and freely incise its sheath longitudinally.

Great temporary relief in central sciatica might be obtained from epidural injection through the sacro-coccygeal foramen. Normal saline, novocain, or 10–20 c.cm. of a 40 per cent. solution of antipyrin might be used. This procedure, coupled with local application of heat, usually relieved most cases. Foci of infection must be treated and protein shock therapy had value. Putti was strongly convinced of the importance of immobilisation by a plaster jacket, later replaced by a celluloid corset, which was worn for 6 or 12 months. In chronic cases careful manipulation under an anæsthetic often gave relief.

EDINBURGH OBSTETRICAL SOCIETY.

A MEETING of this Society, with Dr. HAIG FERGUSON, the President, in the chair, was held on Feb. 8th, when Dr. D. M. LINDSAY (Glasgow) read a paper on the

Reduction of Forceps Delivery as a Basis for Prophylactic Gynæcology.

Internatal trauma affecting the birth canal was, he suggested, often due to the application of forceps; it might be visible to the naked eye or might be almost microscopical, and it was commonly a result of over-stretching of the paracervical tissue or pubocervical fascia. Antenatal supervision should minimise the number of forceps cases, and in his opinion only those in which there was a medium amount of overlapping of the fœtal head at the beginning of labour would require forceps delivery. Use of the forceps would also be advisable in cases of occipito-posterior presentation in which manual rotation was impossible, and in those difficult cases in which there was resistance of the pelvic floor and marked narrowing or tenseness of the vaginal introitus. Dr. Lindsay believed that the standard indications for forceps delivery could be very much reduced in number; he did not think, for example, that the use of forceps was warranted in cardiac cases, in which Cæsarean section was much more satisfactory. Fœtal signs of distress were certainly definite indications for interference, but such interference was only permissible when the labour had progressed far enough to make delivery safe for the mother; he saw no benefit in delivering a debilitated child quickly when rapid delivery entailed maternal injury. The mother's safety should be the first consideration. In the treatment of primary uterine inertia Dr. Lindsay was opposed to the use of forceps as delivery could often be effected by emptying the bowel and the bladder and by hot vaginal douching. In secondary uterine inertia the uterus required rest; morphia was indicated in such cases and no forceps. Perineal rigidity might be treated by the administration of light anæsthesia, and in persistent rigidity such anæsthesia, and such expedients as fundal pressure or administration of pituitary extract often gave the necessary stimulus. Where forceps were necessary they should be applied in such a way as to prevent serious birth injuries, and it had been proved that they were only safe when applied in the biparietal diameters. He regarded the axis-traction forceps as dangerous, for when they were applied with the head in the oblique diameter of the pelvis the vagina was pulled taut and forcibly twisted as rotation of the head progressed. This often caused extensive vaginal lacerations. In Dr. Lindsay's opinion the best instrument to-day was the Kiellan forceps. This was a long forceps, practically straight, the pelvic curve being almost negligible. Its application was always a biparietal cephalic one, no matter what the position of the head. It was smaller than the Milne-Murray forceps, it had no fixation screw and no axis-traction apparatus, and it was constantly under the control of the operator, who knew the amount of force being expended. There was much less compression of the child's head and (what was even more important) compression was always maintained in the safest cephalic diameters. If the high forceps operation was to remain at all in obstetric practice then the Kielland forceps was the ideal instrument. In conclusion, Dr. Lindsay condemned the use of forceps as a lever and as a rotator, stating that it should only be used as a tractor and considered as a compressor, the latter action being only utilised in the planes where it would be most efficient and where the compression would least damage the child. If this line of practice were followed it would be realised that the only safe forceps delivery which could be completed under the unfavourable surgical circumstances usually found in working-class areas was the low forceps operation.

ROYAL MEDICAL BENEVOLENT FUND.—At the last meeting of the committee 54 cases were considered and £957 voted 49 applicants. The following are notes of some of the cases relieved.

Daughter, aged 67, of M.R.C.S. Eng. who died in 1895. She has been mentally afflicted since childhood. Lives with a sister aged 61, to whom the Fund gave a grant of £26 in December. An old lady lives with them and pays 10*s.* a week. Income of sisters £34 per annum each. The cottage belongs to them and rates amount to £2 4*s.* 8*d.* per annum. Voted £26.

Daughter, aged 44, of M.D. who died in 1908. Her father lost all his money in speculation, and applicant, though delicate, trained as a nurse, which profession she followed until she had a serious breakdown through war work. She has several times tried to resume work, but the doctor now says she will not be able to do so again. She is suffering from tuberculosis. Own income £40. Lives chiefly with friends. Voted £26.

Widow, aged 65, of M.R.C.S. Eng. who died in 1903. Applicant and her daughter lived together until the daughter, aged 21, was removed to a mental hospital; her income of £70 per annum has now to be used for her maintenance in the hospital. This leaves the applicant with only £26 per annum allowance from her sister-in-law who also pays the rent. Voted £26.

L.R.C.P. & S. 1883, aged 73, married, wife, aged 74. They one son, who is married and has one child, has started a small preparatory school. Applicant, who had to give up his practice two years ago on account of deafness, says, "I have outlived and exhausted my little capital." The friends with whom he and his wife live cannot afford to keep them for nothing. Own income old age pension £52 per annum. Voted £40.

L.R.C.P. & S., aged 92, widower. As a result of losing all his money had to start again to practise, and last year made £173. He is really too old to work now, but force of circumstances renders it necessary. He received gifts to the amount of £25. Interest on mortgages £68. Rates, &c., £23. Debts £61. Voted £40 in quarterly instalments and a special grant of £15.

Subscriptions may be sent to the hon. treasurer, Charters Symonds, at 11, Chandos-street, Cavendish-square, W. 1.

Reviews and Notices of Books.

ACTINOTHERAPY.

Handbuch der Lichttherapie. Edited by W. HAUSMANN and R. VOLK, with the coöperation of O. BERNHARD, O. CHIEVITZ, F. M. EXNER, F. HAUER, K. HULDSCHINSKY, E. LANG, A. LAQUEUR, G. POLITZER, L. SCHÖNBAUER, J. SORGO, O. STRANDBERG, J. URBANEK, C. H. WÜRTZEN. Vienna: Julius Springer. 1927. Pp. 444. M.36.

THIS book presents in easily accessible form the work of some of the best-known continental authorities on actinotherapy. Since it is not a text-book on light treatment but a collection of valuable individual contributions, some repetitions and some contradictory statements are to be found. The section on light physics, energy measurements, and the discussion on recent work with photochemical and photoelectric methods will be helpful to those who are not familiar with this side of the subject. The biophysiological exposition is undertaken by Hausmann. Due stress is laid on the changes in the physical condition of irradiated proteins. In the section on metabolism, the point is made that although no change in total metabolism may occur, yet the study of the end-products of purin-metabolism shows that irradiation may influence some of the intermediate steps in the metabolism of animals. The diminution in blood-sugar and glycosuria in irradiated experimental animals and in diabetics is noted. In the pathological section some excellent micrephotographs are reproduced showing the changes observable in irradiated skin. Strandberg contributes two chapters, one on general indications for light treatment and one on the treatment of laryngeal, nasal, and aural tuberculosis. The good results obtained by this pioneer worker in tuberculous laryngitis by general carbon-arc baths, sometimes combined with carefully timed local interference, are now generally accepted. Bernhard, whose work is also known to English readers, reviews in the chapter on light treatment in surgery the results obtained by heliotherapy in the High Alps. Chievitz writes on the same subject, and it is interesting to compare his results, obtained by actinotherapy in Copenhagen, with those of the previous writer. Huldschinsky appropriately contributes the chapter on light treatment in pædiatrics. He considers prophylactic irradiations of all infants an ideal which has so far received too little support from local health authorities. One of the most valuable contributions is that of Sorgo, who supplies a considered statement of the probable mode of action of light treatment in phthisis. He makes evident the analogy with tuberculin and with non-specific protein therapy, and explains in a convincing way the apparently contradictory results and statements on the subject. Absorption from the irradiated skin of a substance which appears to be specific, and which causes focal reactions, is regarded by him as one of the main factors in the light treatment of pulmonary tuberculosis. Urbanek writes on the treatment of diseases of the eye. This is a field which has not yet been fully investigated and his article forms a good introduction to the subject.

Altogether a most informative collection of articles.

Actinotherapy for General Practitioners. By H. G. FALKNER, L.R.C.S., L.R.C.P. Irel., L.M.Rot. Dub., Actinotherapeutist to the London Teachers' Association; late O.C. Maudsley Neurological Hospital, Denmark Hill; late Medical Officer of Health, Lynton and District (Devon). London: Baillière, Tindall and Cox. 1927. Pp. 152. 7*s.* 6*d.*

THIS book, the author tells us, has been written at the request of many of his friends and particularly those in the medical profession who, desiring more practical knowledge of the subject, were unable to obtain any book dealing with it in a concise practical manner. Considering the number of books which have been published within the last three years on the subject of actinotherapy, we should not have thought that knowledge would have been sought in vain. Dr. Falkner's book is one which may be useful to general practitioners, but he is not always explicit in his statements, as for example, on p. 79, we read "It can be safely said that all cases of rheumatism, acute and chronic, neuritis, sciatica, &c., will be benefited if not cured . . . . One often encounters a patient whom the ray does not benefit." The book closes with a summary of diseases which, in the author's opinion, are suitable for actinotherapy, and the appropriate dosage is suggested.

HANDBOOK OF DISEASES OF THE EAR.

Fifth edition. By RICHARD LAKE, F.R.C.S., Consulting Surgeon, Royal Ear Hospital; and E. A. PETERS, M.D. Cantab., F.R.C.S., Surgeon, Royal Ear Hospital, and Surgeon, Nose, Throat and Ear Department, Bolingbroke Hospital. London: Baillière, Tindall and Cox. 1927. Pp. 310. 12*s.* 6*d.*

THE revision of this, the fifth, edition of Lake's Handbook of Diseases of the Ear, has been undertaken by his colleague, Dr. E. A. Peters. The book has gradually increased in size, but has not outgrown the dimensions of a convenient little manual for students and practitioners. The plan of the book has not been changed, and, except for a brief description of the anatomy and physiology of the cochlea and labyrinth, the additions deal mainly with the details of description and treatment necessary to keep the work up to date. The excellent colour plates showing pathological conditions of the membrane tympani remain a feature of the book, and their colouring and printing has been improved. Attention may be drawn to a few points which might be reconsidered when revision for a further edition is contemplated. The statement that "in all cases of non-suppurative middle-ear disease all errors of structures in the nose should be corrected and any tonsillar tissue removed" is too sweeping, and does not take into account the harm done to the reputation of the specialty by useless operations on the nose and throat in incurable cases of deafness. In the description of paracentesis of the drum no recommendation of general, or indeed of local, anæsthesia is given, and no mention is made of the extreme, though transitory, pain of this operation. On the subject of mastoid operations, it is stated that "Schwartze's operation should be reserved for children," and is apparently not advised for acute suppuration in adults. There is a misprint on p. 184, where ℥ii is written for ℥ii. The book may be cordially recommended as an excellent handbook of otology of a size suitable for general practitioners and students.

APPENDICITIS.

By HUBERT A. ROYSTER, A.B., M.D., Surgeon to Red Hospital; Surgeon-in-Chief, St. Agnes Hospital, Raleigh, N.C. London and New York: D. Appleton and Co. 1927. Pp. 370. 21*s.*

THIS monograph is an attempt to present to the reader an account of present-day knowledge of a very common disease. An interesting historical sketch is followed by chapters upon anatomy and ætiology, after which come accounts of the pathology, symptoms, treatment, and prognosis, including a special section on the disease in children. The author does not seek to bring forward any one special view, though his own conclusions, the result of a large experience, are noteworthy, and make the book worth reading. He has not been so successful in dealing with other subjects. For example, his account of the technique of appendectomy under local anæsthesia on page 298 could not be followed by any surgeon without reference to other sources of information, and the directions are so scrappy as to make us doubt whether the author

has actually himself employed this method. The treatment of a residual abscess is a point upon which many a reader will desire information. It is dismissed on page 345 in a paragraph of six lines. We can find no description of the technique of opening a pelvic abscess by the rectum or vagina, nor any discussion of the relative merits of the approach by these routes as compared with that from above. The instructions for dealing with a subphrenic abscess on page 346 are very poor. As to chronic appendicitis the author quotes the views of many men, but finds himself unable, from published work or his own experience, to "lay out any detailed symptomatology—there is none." Yet he believes in the existence of a true primary chronic appendicitis; this is an unsatisfactory situation in which other surgeons find themselves, and one which renders the decision as to operative treatment extremely difficult. The section headed "When to Operate" contains the original recommendations of Ochsner and Murphy; the author's views on this subject appear to us sound. We do not approve his recommendation (p. 302) to use a long external rectus sheath incision for general abdominal exploration—it is too mutilating; but his method of enlarging the McBurney incision in case of need seems a good way out of an irksome situation.

JOURNALS.

GLASGOW MEDICAL JOURNAL CENTENARY NUMBER.[1]—Last week we alluded briefly to the appearance of the Centenary Number of our well-known contemporary, but more than a passing note of congratulation is due to an issue which reflects faithfully in its various chapters the progress of the medical profession alike in its scientific, literary, and material aspects.

The Centenary Number opens with a series of concise biographies of the editors of the *G.M.J.* throughout the centenary, the history of the journal which they conducted emerging in this way. The first editor was Dr. William Mackenzie, a well-known ophthalmologist and linguist, who early secured for his pages a group of distinguished contributors. He was shortly succeeded by Dr. William Weir, first surgeon and then physician to the Royal Infirmary and for a time lecturer in phrenology in the Andersonian Institution. With Dr. Weir, in each case apparently only for a short period of time, there was associated Dr. James Lawrie, later Regius professor of surgery in the University and its first representative on the General Medical Council, and the exciting Dr. Andrew Buchanan, of whom the late Dr. Wallace Anderson wrote: "He wanted the tact, the discretion, the worldly wisdom of the successful editor"; but he evidently laid about him right and left, and in October, 1833, the journal came to an untimely but temporary end, not to appear again until 1851. On the re-issue Dr. William Weir returned as editor, a publisher-proprietor was found, and continuity for the rest of the period was maintained. Of the editors who followed many were, or became, distinguished figures in their profession, such as Dr. John Black Cowan, Dr. George Buchanan ("Wee Geordie"), Dr. William Leishman, the professor of obstetrics and father of the late Sir William Leishman, Dr. P. A. Simpson, and Dr. J. B. Russell. The appointment of the latter editor synchronised with the acquisition of the journal by the Glasgow and West of Scotland Medical Association, and Russell himself is famous for having built up the public health administration of the city. Russell was succeeded by Dr. Joseph Coats, Dr. Alexander Napier, and, among others, Dr. John Lindsay Steven, Dr. T. K. Monro, Dr. G. H. Edington, Dr. W. R. Jack, and the present editors, Dr. John Patrick and Dr. G. A. Allan. The biographies are adorned with portraits of many of their subjects, to some of whom a wealth of beard and whisker must have given an awe-inspiring appearance—we cannot imagine opposition to Dr. Andrew Buchanan being undertaken lightly.

[1] Glasgow: Alexander McDougall; London: H. K. Lewis and Co., Ltd. 5*s*. to non-subscribers.

A note from Sir Donald MacAlister on the medical school of the University from 1828 to the present day precedes fittingly a summary by Dr. Alexander Napier of the progress of therapeutics throughout the period; in this, while showing that the medical profession is to-day better equipped with weapons of precision for the acquisition of accurate knowledge, he lays stress upon the vista opened up to therapeutics by the discovery of the functions of the ductless glands and of the physiological action of certain of their extracts. Dr. G. H. Edington then exhibits the progress of surgery during the century by analysing the surgical contents of the first four quarterly numbers of the *G.M.J.* appearing in February, May, August, and November, 1828. The excerpts from these volumes give us a bird's-eye view of the state of surgical practice 100 years ago:—"disheartening for all concerned," he says, "were the conditions under which our predecessors worked—cramped as they were by the haunting spectre of sepsis and by the absence of skilled nursing." But the perseverance of these surgeons of old was such that, when light came with Lister, well-instructed and enthusiastic men were able to reap from the start much of the new advantages. Dr. R. M. Buchanan follows with a chapter on the evolution of bacteriology in relation to medical and surgical practice and preventive medicine, and here we find a résumé of the practical applications of bacteriology to the arrest of disease, to the development of sanitation, and to the rapidity and accuracy of diagnosis. Dr. A. K. Chalmers writes on the problems of medical administration in the early nineteenth century and later, and shows that Glasgow was among the first of the communities which helped to spread a knowledge of the protection against small-pox which vaccination afforded. The Faculty of Physicians and Surgeons of Glasgow in 1801 had instituted a vaccination station whereby an old obligation of the Faculty to visit the poor gratis, which had fallen into disuse owing to industrial conditions, was in a measure revived. This obligation played a part in the securing of the Charter of the Royal Infirmary, it being recognised that the physicians and surgeons had given gratuitous advice, assistance and medicines to the poor of the city until a regular and daily inspection became needed, the population having outgrown the range of a monthly medical service. The summary of the incidence of the zymotic diseases and of the part which preventive measures have played in controlling them in the city of Glasgow makes further interesting reading.

More topical are a series of chapters by Dr. John Henderson describing the position of extramural teaching in Glasgow in 1828 and its progress during the century; by Dr. John F. Fergus on the Glasgow hospitals of a century ago; by Dr. E. H. L. Oliphant on the Royal Faculty of Physicians and Surgeons of Glasgow, in which full acknowledgment is paid to the history of the Faculty published in 1896 by Dr. Alexander Duncan, and bringing the record down to the middle of the last century. Dr. David Rorie, co-editor of the *Caledonian Medical Journal*, congratulates his Glasgow colleagues on the part played by them in a story of progress; he sends an amusing contribution on the hardships of the old Scottish general practitioner.

Articles on medical journalism are written by Dr. T. K. Monro, formerly joint editor of the *G.M.J.* by the late Sir Dawson Williams, until a month ago the editor of the *British Medical Journal*, and by the Editor of THE LANCET. The first and last writers go over similar historical ground, while Sir Dawson Williams introduces to readers a medical journal, *Medicina Curiosa*, published in England, which has escaped previous attention. Book-hunters will be encouraged to look for this publication among bound volumes of miscellaneous pamphlets, for there were only two issues—namely, in June and October, 1684—and only three copies appear to be extant, both issues being in the library of the British Museum, but only the first one in the library of the Royal College of Surgeons of England.

THE LANCET.

LONDON: SATURDAY, MARCH 3, 1928.

APPENDICITIS IN CHILDHOOD.

ELSEWHERE in this issue we publish a report of a meeting of the Royal Society of Medicine at which the Sections of Disease in Children and of Surgery discussed chronic appendicitis in children. Though it is doubtful, strictly speaking, whether such a condition exists apart from comparatively rare cases in which the appendix is attacked by tubercle or actinomycosis, or occupied by threadworms, the clinician is probably justified in using the term to include a group of cases with characteristic symptoms, regardless of whether he can elicit a history of a previous acute attack. This may have caused so little constitutional disturbance as to have passed unnoticed, or its significance may have been missed, and in practice it matters little what the process is called provided that the appendix is justly blamed for the symptoms. At any rate in childhood, the acute condition is more common than the chronic, and its incidence is said to be increasing. The same is apparently true of appendicitis among the population at large, and it is disquieting to note that the death-rate attributed to this disease has also been rising considerably during the last two decades. The increase in mortality is said to be even greater in America than in this country; thus Dr. J. O. BOWER [1] compares an increment of 7·3 per cent. in England and Wales between 1913 and 1923 with one of 22·3 per cent. in the United States in the same decennium. Whilst too much may easily be made of such figures, which can be explained in various ways, most observers who have studied them return with increased vigour to the familiar call for earlier diagnosis. There is evidently something wrong with our methods or with their application, and the discussion last Friday, though directed entirely to chronic appendicitis, may well lead to a general consideration of the disease in the group where its mortality is admittedly highest.

Children offer certain difficulties both in the diagnosis and treatment of abdominal disease, and though they are almost immune from gastric and duodenal ulcer, from gall-stones and visceroptosis, they none the less have their share of abdominal misfortunes and a good deal more than their share of deaths from acute appendicitis. In the adult, this condition has come to be regarded as an incident and such anxiety as still remains is as often financial as personal; in a young child, however, it is always a calamity and only too often ends in catastrophe. Seeing that in the so-called chronic appendicitis there is little need for anxiety, it may well be asked whether we cannot convert an acute case into a chronic. Such a change is undoubtedly desirable, and it seems logical to aim at what Nature often seems to accomplish unaided. But, unfortunately, the attempt can very rarely be made with safety. It is the common experience of surgeons that children bear abdominal infections badly and that an inflamed appendix in a child is often two days in advance of what the operator expects to find; localisation of the infection is less complete than in the adult and general peritonitis more common. It is not too much to say, therefore, that any delay is unjustifiable after diagnosing appendicitis in a child, and such delay becomes more dangerous the younger the patient and the more acute the condition. In practice the difficulty lies in making the diagnosis, and postponement of operation is only justified so long as this is in doubt. Pneumonia, pleurisy, pyelitis, acetonæmia and (perhaps most puzzling of all) the enteritis or colitis of "influenzal" outbreaks, will sometimes baffle the most experienced clinician for a time. It is at this period of heavy responsibility that the Murphy teaching holds out a friendly hand; rest in the Fowler position, no morphia, nothing by the mouth, and the free administration of glucose solution by the rectum will do everything possible to limit the spread of infection while the diagnosis is in doubt. Close watch must be kept on the local physical signs, the pulse-frequency and the appearance of the child, for any of these may vary from hour to hour and will sometimes point clearly to the diagnosis. More often than a leucocyte count a second rectal examination has given the information on which operation could be undertaken. The nature of this operation, when decided upon, is naturally a matter for the individual surgeon, and though removal of the appendix is the proper treatment, all rules are made to be broken, and there are times when even the most enthusiastic subscriber to the truth will content himself with drainage and leave the appendix to a later occasion. This two-stage operation is sometimes necessary in very young children and those in whom the appendix is deeply buried in the thick wall of an abscess, but the risks involved in prolonging the first operation in order to remove the appendix are often justified by the jeopardy in which the patient is placed if suppuration extends into or around the liver and a spreading peritonitis supervenes. Each of these methods—postponement and immediate removal—has its advocates, and deaths seem sometimes to be due to following the one plan and sometimes to following the other. After-treatment offers further questions for discussion, but there are few anxieties for those who follow MURPHY, provided they remember that morphia and mouth-feeding are incompatible, and that he who withholds fluids by the mouth shoulders the responsibility for giving an adequate, measured quantity by some other means.

If it is necessary to broadcast statements about the gravity of acute appendicitis in childhood, they should be accompanied by a declaration that castor oil is much more dangerous than constipation. "Bilious attacks," particularly when abdominal pain is followed by vomiting, are often signs of appendicitis, and with such symptoms castor oil does everything which we most wish to avoid. The nursery medicine cupboard is no place for such a dangerous drug. Where the practitioner is in doubt of the diagnosis he will be wise to order the Fowler position and Murphy treatment while he is making up his mind; and it is always preferable to get surgical advice too soon rather than too late. Such is the preventive surgery of appendicitis.

[1] Amer. Jour. Med. Sci., 1927, clxxiv., 225.

THE EDINBURGH BILL.

WHICHEVER way it may be determined by Parliament, the controversy over the Edinburgh Corporation Bill will have a wholesome educative effect. As our readers are aware, the Bill is aimed at the person who defaults from his treatment for venereal disease before he is fully cured and while he is still liable to infect others. The medical officer of health is to be authorised to serve defaulters with a notice requiring them to consult a medical practitioner or attend treatment, and (unless they produce a certificate from the medical practitioner declaring them free from venereal disease) to undergo treatment until certified cured or unlikely to cause infection. This is not the whole of the Bill. If it is reasonable to require defaulters to complete their treatment, it is equally reasonable to require that persons who have not even begun treatment shall submit themselves thereto.

The Edinburgh Bill therefore provides that the medical officer of health may serve a similar notice upon any person whom he has reason to believe to be suffering from venereal disease and liable to infect others, if such person neglects or refuses to undergo treatment by a medical practitioner or at a treatment centre. Where the patients are under 16, these notices may be served upon their parents or guardians who are to be responsible for carrying out what the notice requires. So far, it will be seen, there is no conspicuous breach of the rule of professional secrecy; the matter is in the hands of the medical officer of health. It is on the next step in the Bill that the issue of secrecy is mainly raised, though the step is one not likely to be taken until after exhausting every effort to apply pressure on the patient to undergo treatment voluntarily. This step is the provision of machinery for securing the removal of a patient to hospital and his detention there if the medical officer of health certifies that he is suffering from venereal disease and is liable to infect others and that his removal and detention is expedient in order to prevent the spread of infection. The order for removal and detention may be made by a police-court either upon production of the certificate or upon adequate medical evidence of the necessity and desirability of making such an order in the public interest. The application for an order and the giving of medical evidence in the police-court are incidents which potentially jeopardise the principle of absolute professional secrecy. But there is to be no public disclosure; the Bill insists that all applications shall be heard in camera; it excludes from the court all persons except the patient, the medical witnesses, and the legal representatives. Those who cherish unqualified views of the inviolable liberty of the subject will no doubt dislike the element of compulsion in the Bill; they will also attack the further clause which would allow the medical officer of health to require parents to be medically examined and to undergo treatment if necessary where a child under 16 is found to be suffering from certain specified diseases of syphilitic or gonorrhœal origin. Defence of the liberty of the subject and defence of medical secrecy are two different matters. The medical profession is not so intimately interested in the former as in the latter. Liberty to spread a dangerous infection makes no strong appeal. If it were not for the question of secrecy, doctors would, we believe, have little hesitation in supporting the Bill. The Trevethin Committee (on which medical interests were well represented) recommended that the experiment of special measures for dealing with defaulters should be allowed for a limited time in a particular area where a case for such measures had been made out. Undeniably the City of Edinburgh has a strong case. It has in operation an admirably equipped scheme; it has been more successful in dealing with defaulters than any other part of the country. If it finds that nevertheless its defaulters average 1000 cases a year, it is justified in making some further attempt to reduce their numbers, to remove a public danger, and to avoid a disheartening waste of medical effort and public money.

Extreme insistence upon the merits of medical secrecy is, in our opinion, appropriate in protesting against the obligation to disclose a patient's confidences in open court—for example, in the course of divorce proceedings. We see no reason why the doctor should not be allowed to claim the same privilege in the witness-box as barristers and solicitors enjoy. But the supporters of the Edinburgh Bill are entitled to point out that the consequences of disclosure are vastly different when the proceedings take place behind closed doors and are unreported. The duty of secrecy may have to be weighed against other and possibly conflicting duties. Moral or legal, the duty to refrain from exposing others to infection is not merely a matter of venereal disease. If a medical practitioner would take strong action to prevent a thoughtless parent from sending to a public school a boy suffering from mumps or measles, is not equally strong action justified to prevent a venereal disease defaulter from spreading infection? The developments of recent decades have not been without their influence upon professional traditions. A system of State health insurance has introduced a third-party element into the old relationship of doctor and patient. The compulsory notification of infectious disease has meant another modification of ideas. Parliament has even (in the Bradford Corporation Act of 1925) made the experiment of applying notification to venereal disease in the case of grown-up persons who refuse or default from treatment and in the case of infant children. Do practitioners in Bradford find the existence of this statutory provision incompatible with their professional conscience? The Edinburgh proposals differ in character from the Bradford precedent, but the Edinburgh and Bradford provisions are alike in possessing a certain latent value, even if left inoperative. Medical officers of health will welcome the right to exercise such powers even though no medical practitioner is ever called into the witness-box. Critics may insist that, in the battle against venereal disease, no sharper weapon is to be used against the defaulter for fear of infringing the abstract principle of professional confidence. But they are incurring a grave responsibility towards posterity.

THE PHYSIOLOGICAL SOCIETY.

ON March 20th, 1926, the Physiological Society completed the first 50 years of its existence, though the jubilee celebration was not held till the following year, and to mark this memorable occasion Sir EDWARD SHARPEY-SCHAFER was requested to compile a history of the Society. This task he has now completed, and the history is published as a supplement to the *Journal of Physiology* for December, 1927. It is a volume of extraordinary interest. Glancing through its pages one might almost imagine it to be a "Who's Who" of modern British medicine instead of the domestic history of a single branch of medical science. Great names in medicine, surgery, pathology,

cteriology, and biochemistry appear on every page, d it is abundantly clear what an important part e Society has played, and what a powerful influence has exercised in the development of medical science. ne British School of Physiology is so famous that it difficult to realise that it is of comparatively recent owth. In the middle of the nineteenth century the untry which had produced WILLIAM HUNTER emed to be no longer interested in the exact study of e functions of the human body. While BERNARD, AJENDIE, MÜLLER, HELMHOLTZ, and LUDWIG were rsuing their brilliant investigations in France and rmany, in this country the teaching of physiology is carried out by surgeons and physicians, busy with eir private and hospital practice, and the science experimental physiology did not exist. But in iversity College, London, WILLIAM SHARPEY, who s professor of general anatomy and physiology, alised the importance of the study of function. He nself was not an experimentalist, but he had the ion to appreciate the fundamental importance of e experimental method, and he induced MICHAEL STER, a former student of University College and spital, to give up practice and to return to the llege as professor of practical physiology. The ching of physiology at University College, mentary though it was in its early days, soon began exercise a profound influence in the other London ools. Not only was the teaching improved, but lependent workers were encouraged to carry out estigations for themselves. Most of them, like VY, were engaged in active clinical practice, but ers, under SHARPEY'S influence, forsook clinical rk and devoted themselves wholeheartedly to the oratory. BURDON SANDERSON was one of these, d when in 1870 FOSTER was appointed on the gestion of HUXLEY to the newly instituted Prælec- ship of Physiology in Trinity College, Cambridge, NDERSON succeeded him in the chair of practical ysiology at University College. The foundations of tish physiology had been well and truly laid by ARPEY, and MICHAEL FOSTER at Cambridge and RDON SANDERSON at University College proceeded develop the two great schools of physiology which st in undiminished vigour to this day.

n all branches of human activity the need is felt, ner or later, of some organisation by means of ich workers in similar fields may be brought ether to their common advantage, and there is no ubt that the Physiological Society would eventually e been formed. But it is interesting to note that ysiologists were actually driven to form an associa- n to protect themselves and, what was more import- , the science to which they were devoted. The growth xperimental physiology and pathology necessitated eriments on living animals. Before long a wide- ead agitation against vivisection sprang up, and oyal Commission was appointed to investigate the ject. This was obviously only the preliminary to liamentary action, and it became essential that se interested in experimental biology should place mselves in a position to guard the interests of ntific medicine. BURDON SANDERSON invited the st prominent physiologists of the day to meet at house to discuss the matter, and suggested in his er of invitation the formation of the Society: will probably also be proposed at the meeting to n an association of physiologists for mutual efit and protection." This suggestion was acted n, and from this meeting of 19 men has grown the iety which now has a membership of upwards of . Sir EDWARD SHARPEY-SCHAFER was one of the inal founders, and we can well understand that the compilation of this history has been to him, as he says, a real labour of love. The extracts from the minute books are full of interest and have a personal touch which is, indeed, characteristic of the Society. Particularly happy are the numerous biographical notes. SIMS REEVES attended one of the meetings, but "it is not recorded whether he obliged the Company with a song." During the same year it was resolved that the number of ordinary members should be increased from 40 to 50. The number is now unlimited, and the original rule that every member should be a working physiologist has been abandoned, though it is noted in 1925 that some of the meetings were so largely attended that members had difficulty in seeing the demonstrations. Women were admitted to the Society in 1915 by a fairly substantial majority on a post-card poll, though it is curious to note that their presence was more welcome in the austere atmosphere of the laboratory than in the more social surroundings of the refectory. In 1916 the Society decided to publish *Physiological Abstracts*, and in 1926 it assumed control of the *Journal of Physiology*.

Enough has been said to indicate the profound interest of Sir EDWARD SHARPEY-SCHAFER'S compilation, and not only the Society, but the whole of the physiological world must congratulate him on an achievement which could not have been carried out by anyone else, and which called urgently for performance.

Annotations.

"Ne quid nimis."

MUTABILITY OF PNEUMOCOCCAL TYPES.

IT has long been known that certain species of bacteria, such as the meningococci and pneumococci, can be subdivided into serological types, and it has also been recognised that these types are more or less specific serologically, and from a therapeutic point of view necessitate the use of monovalent sera if the best results are to be obtained. What these differences mean and what the relation of one type to another may be is far less clear, but recent investigations of the serological types of pneumococcus, by Dr. F. Griffiths,[1] have thrown a certain amount of light on this obscure question and given results of considerable significance in other directions. Some time ago Griffiths found that the effect of growing pneumococci in immune serum was to produce so-called "rough" strains, which are avirulent and have lost their serological identity. He now finds that it is sometimes possible to restore these properties to the organisms by passing them through the animal body. This is a result by no means easy of achievement, since these attenuated types have little ability to establish themselves in the living animal; but it was discovered that the reversion to virulent type took place much more readily if a considerable mass of dead culture of pneumococcus was inoculated along with the living organisms. This suggests that there are certain constituents of the dead cocci which the living ones are able to metabolise and which are essential for their virulence, and pursuing this line of investigation in greater detail Griffiths found that pneumococci whose virulence was restored by this manœuvre assumed the type of the dead organism, instead of reverting to their own original type. Thus a rough form of Type I. inoculated with a dead culture of Type II. became transformed into the ordinary Type II. These phenomena seem to show that in the attenuated "rough" state the organisms are unspecialised and are capable of developing into any of the virulent fixed types according to what environmental conditions or pabulum

[1] The Significance of Pneumococcal Types. By Fred. Griffiths, M.B., Journal of Hygiene, 1928, xxvii., 113.

may dictate. The possible importance of these findings is more than academic, for it suggests not only a mechanism by which the virulent types may spring into existence from more lowly vegetative forms, but also a way in which the virulent organisms may disappear in the course of recovery and convalescence. It has commonly been assumed that in the latter condition the organisms died out, but there are difficulties in the way of universal acceptance of this view, and Griffiths's demonstration that in the presence of immune bodies organisms may mutate into an undistinguished form, suggests that an old and rather despised view, that they may lose virulence instead of dying out, may after all be correct.

THE WAR ON RATS.

Is a world war against rats worth while? The Danes and the other Scandinavian countries evidently think so, judging from a recent communication to the French Academy of Medicine by Dr. Gabriel Petit, in which he describes the dogged and successful fight put up by Denmark, and announces an international conference to be held this summer in France. The Danish effort began in 1898 with the formation of a national society and a demonstration of rat destruction in Copenhagen and Frederiksberg (virtually one town) on the premium system. This was imitated in 1900 by the Japanese, as the result of an outbreak of plague, and by other countries. France made a law in 1903, which was, however, limited to shipping. In 1907 the first Danish rat law imposed on district councils the liability of paying from ½*d.* to 1*d.* for each dead rat, and in three years nearly four million rats were killed at a cost of half a million shillings. As Dr. Petit points out, this was a profitable transaction, seeing that it does not take a rat long to eat and waste a shillingsworth of grain. As the rats grew scarce the small premium became less attractive and attention was turned to other methods of destruction. The second law (1910) left the choice of the method of destruction to the 1200 parishes, and during its five years' operation about 1½ millions of rats were destroyed at a price of 200,000 shillings. This rate of destruction was perhaps only sufficient to counterbalance the natural increase of the rat population. The world war caused a lull, but outbreaks of plague in Stockholm in 1919, and in Paris and Marseilles in 1920, revived interest in the matter among the Scandinavians. A third Danish law in 1921 put obligations on seaports to take energetic measures, and also established a general crusade. Every owner of property became liable to a penalty for failure to conform. The cost of the scheme fell on the district councils, and a Government subvention of 40,000 crowns was paid, partly as an encouragement, partly for dealing with public property. "Ratin," a bacterial poison of the paratyphoid group, and "ratinin," a preparation of *Scilla maritima* (*rubra*) became the accredited poisons. This time remarkable success crowned the enterprise, and when the third law came up for renewal in 1924 it was replaced by a permanent law, applying not only to ports, but to all towns and commercial establishments in Denmark, and the Government subvention was increased to 60,000 crowns. The Royal School of Veterinary Science and Agriculture was put in control of the methods of destruction. Dr. Louis Bahr, of Copenhagen, formerly assistant to Prof. C. O. Jensen, Director of the State Veterinary Service of the Serumtherapy Institute of the Royal School of Agriculture and Veterinary Science from 1906 onwards, has been responsible for the production of "ratin" and for seeing that its virulence is kept at a high pitch. As the result of the use of "ratin" it is estimated that at least 80 per cent. of the rats die within 8 to 15 days from enteritis or septicæmia and that, if destruction is not complete in three weeks, the standardised preparation of squill, which kills in 24 hours, will account for the remainder. It was in the year 1902, at a shipping congress in Copenhagen, that the International Society for the Destruction of Rats was formed, with Mr. Zuschlag, the enthusiast founder of the Danish Society, as first presider and Dr. Loir, one of the French delegates, as vic president. The outbreak of the world war prevent the proposed international congress in Copenhag in 1914, so that the French International Congress 1928, with sessions at Paris and Havre, may be regard as a resuscitation of international effort. The seapo of Havre, with Dr. Loir as the president of its Bure of Hygiene, has for many years been very active in t rat campaign.

In this country a useful booklet on the subje by Mr. A. Moore Hogarth has recently been issue it is called "Rats and How to Kill Them."[1] T same house published in 1924 a very complete a authoritative work on this question, entitled "Ra and How to Destroy Them," dedicated to Lo Aberconway and Sir James Crichton-Browne, two men who had specially drawn attention the rat menace. The author, the late Mr. Ma Hovell, F.R.C.S., showed the need for a mu more complete scheme in this country, unc scientific direction, and conducted by the larg local governing bodies. The book is a mine of inform tion. The author refers to the diseases other th plague which are spread by rats and to the enormo damage to our food-supply from their depredatio He shows that a pair of rats will eat or waste 5 lb. flour in a week, that a moderate estimate puts t rat population of the country at 40 millions, and th the damage done runs into millions and may be much as £1,000,000 a week. As a maritime count we should be specially interested in a world sche for rat extermination. In concluding his paper the French Academy, Dr. Petit quotes Prof. Calmet who, after praising the Danish effort and maki reference to the risk to health and the damage to wea from rats, said: "Such misdeeds clamour for reprisa We can no longer tolerate the ravages of rats. Again the serious and continuous menace from th activity, cunning, and fecundity we must pit o brains, our determination, and the scientific weapo we know how to forge for their destruction. L us unite internationally our forces and munitions war."

CHRONIC INFECTIONS OF THE SEMINAL TRACT.

Two papers were published at the close of last y which, under different titles, dealt primarily wi the treatment of chronic infections of the seminal tra The first of these was a paper by W. T. Belfield a H. C. Rolnick, in the December number of the *Jour of the American Medical Association*, entitled Obser tions on the Physiology of the Seminal Duct, and second one by Georges Luys, in the *Bulletin* of Société des Chirurgiens de Paris. In dealing with physiology of the seminal tract the American auth first discuss the function of the epididymis. Wy should the human spermatazoon, whose length s only 1/500th of an inch, be forced to traverse a tr of 20 feet—that is to say, of more than 100,000 tim its own length—before it reaches its destinatio The fact that in quadrupeds the seminal vesic if they exist, are solid glands that open direc into the urethra, suggests that the epididym which is always well developed in these anim acts as a reservoir for the storage of spermataz From this it is logical to deduce that it perfor the same function in man; this is certainly not only function. "During the mating season of snal birds, and mammals, the epididymis increases grea in bulk, its tiny cells become larger and more numero and the volume of these greater; with the pass of the mating season its bulk and secretion subsid the ante-nuptial dimensions." The provision o secretion is, therefore, an integral part of its funct The exact nature of this secretion is still unkno but the chemical analysis of the aspirated conte

[1] John Bale, Sons and Danielsson, Ltd. 6*d.*

spermatoceles suggests that it is the epididymis that is mainly responsible for the secretion of the proteins that are found in the semen. Belfield long ago called attention to the fact that the epididymis, like other secretory glands, is capable on occasions of acting also as an organ of excretion. This is proved by the fact that when dyes, such as methylene-blue, mercurochrome, and silver arsphenamin, are injected intravenously into dogs their colour appears in the body of the epididymis, leaving the head uncoloured. An obvious corollary to this is the possibility of influencing infections of the seminal tract by means of intravenous therapy. In the latter half of their paper Drs. Belfield and Rolnick describe cases of non-tuberculous seminal infection which yielded promptly to intravenous injections of neoarsphenamin or sulpharsphenamin. They therefore urge that cases of chronic prostato-vesiculitis, complicated by uncomplicated by arthritis or secondary iritis, should be treated by such means before resorting to surgical therapy.

Dr. Georges Luys, in his paper on catheterisation of the ejaculatory ducts, tabulates the indications for catheterisation under the following headings: stricture of the ejaculatory ducts; distension of the vesicles uninfluenced by prostatic massage; pain after ejaculation; hæmospermia; ejaculation without injection; congenital strictures: repeated attacks of epididymitis and azoöspermia due to obliteration of the ejaculatory ducts. He furnishes details of the technique of catheterisation with the posterior urethroscope that bears his name. Whilst admitting the difficulty of the operation and its impossibility in certain cases, he considers that the procedure may sometimes be feasible after careful treatment of the verumontanum by diathermy. The cauterisation of an œdematous and hypertrophied verumontanum will often render obvious ejaculatory ducts that were previously invisible. Whilst this method of treatment may be of great service, it must be carried out with restraint, as otherwise more harm than good may result.

THE OPIUM QUESTION IN PERSIA.

PERSIA is both a large producer and a large consumer of opium, and the problem which it presents in face of both The Hague and the Geneva Opium Conventions is a complicated one. Dr. A. R. Neligan deals with the subject [1] in the way that would be expected from one who has lived 20 years in that country, who was until recently physician to the British Legation at Teheran, and who has studied sympathetically and critically the medical and economic aspects of the use and abuse of opium among the Persians.

The cultivation of the poppy and the internal and external trade in opium are closely interwoven with the social and commercial life of the people of Persia, and a restrictive policy, applicable alike to production and consumption of the drug, is confronted by many difficulties. Some 600 tons of opium are produced annually in Persia and the money value thereof is about £2,000,000 a year, while the Government receives 9 per cent. of its revenue from opium. Half the total output is exported, mostly by way of the Persian Gulf, and largely to the Far East. Persian opium had at one time a high repute for pharmaceutical purposes, by reason of its rich morphia content, but it is maintained by the Government that Persia at the present time supplies less than 1 per cent. of the opium used for the preparation of morphia, heroin, and medicinal opium. Nevertheless there are some 3,000 acres under the poppy in Persia, some 300 tons of opium are consumed annually in the country, while 10 per cent. of the people are opium-smokers and one-fourth of the inhabitants of Ispahan are engaged, directly or indirectly, in this lucrative industry. If the figure postulated by the League of Nations as representing the medical or legitimate quantum of opium—12 lb. per annum per 10,000 of the population—be accepted, it appears that in Persia the consumption is at the rate of 459 lb. per annum per 10,000. If Persia, which signed, under reserves, both The Hague Opium Convention of 1912 and the Geneva Convention of 1925, but has ratified neither, is to be levelled up to the prescribed standard, it is obvious that there is much to be done.

The Commission which was recently sent by the League of Nations to investigate the special case of Persia reported on the financial aspects of the question and the possibility of substituting other crops for those of the poppy. The Persian Government has retorted that before doing so it must secure financial autonomy and control of customs tariffs, and urges that if it is to be rationed in regard to opium production the same restrictions must be applied to other producing countries as well as to those which cultivate the coca plant. The Government has, however, intimated a willingness, in due course, to reduce opium production by 10 per cent. annually for three years and then, in the light of the experience gained, to consider the effect such curtailment shall have had on the national budget, the trade balance, and the opium farmers respectively. Dr. Neligan, while fully recognising the magnitude and difficulty of the economic problems thus raised, is convinced of the physical and moral evils resulting from the non-medical use of opium. He thinks the abuse has increased greatly in recent years and is still increasing. He has observed the incompetence and slackness in men, women, and children from the abuse of the drug, and has witnessed the sapping of physique and moral in its addicts. He thinks that opium takes a tighter hold upon its victims than other narcotics, cocaine excepted, that moderation in its use is more difficult, and that, while it does not occasion the same organic lesions as alcoholism, its effects are definitely more weakening, especially on the moral side. In view of the exaggerated assertions of partisan writers it is well for serious students of the opium problem to read Dr. Neligan's able and reasoned statement.

[1] The Opium Question, with Special Reference to Persia. London: John Bale, Sons and Danielsson. 1927. Pp. 84. 5s.

CONGENITAL CATARACT.

ONE of the most unsatisfactory conditions that come to ophthalmic surgeons for treatment is the dense lenticular opacity sometimes present at birth. It is much more difficult to deal with than lamellar cataract, which is more common and seldom present at birth, being first found, as a rule, at a period of infancy when the child has had ample time to acquire the art of central fixation. True congenital cataract, when dense, makes central fixation impossible, and when, as is nearly always the case, it is bilateral, it gives rise to a permanent nystagmus, unless a successful operation or series of operations removes the obstacle to central fixation at an early age. The disadvantages of operation in very early infancy are obvious, and since congenital cataract is always a developmental defect and may be only one feature of a faulty growth—the eye may be micro-ophthalmic for instance—useful vision cannot be guaranteed even after apparently successful operative treatment. Cases first operated on at a later period are almost sure to be vitiated by nystagmus. A considerable proportion of the inmates of blind schools are children who have been operated on for congenital cataract, in some cases with apparent success, as far as the technique is concerned, but who display a decided nystagmus which reduces their vision, even with correcting lenses, to a point lower than that necessary for them to earn their living in ordinary ways. Further disadvantages of the accepted treatment of these cases have recently been pointed out by Dr. L. Webster Fox, of Philadelphia,[1] He suggests that there may be deleterious allergic reactions during the periods when the lens matter is being absorbed in the anterior chamber after each needling and he remarks on the danger of causing adhesions between the vitreous and the cornea (a

[1] Jour. Amer. Med. Assoc., Dec. 31st, 1927.

danger which could be avoided by entering the needle through the limbus). There is the further inconvenience, which in infancy may be prohibitive, of wearing spectacles with heavy lenses. As an alternative to needling he strongly advocates an optical iridectomy, in a single operation on each eye, which is comparatively easy to perform. This is frequently done in this country, both in cases of true congenital and of lamellar cataract, but it is only applicable when, with a dilated pupil, there is sufficient clear lens matter to form a fairly good peripheral pupil. The most important thing, from the point of view of the family doctor, is to decide at what period of infancy an operation should be undertaken. On this subject there appears to be some lack of agreement among authorities. Most would say as early as possible, and Fuchs says during the first few weeks of life.[2] Turok and Grout, in their text-book, say as early as the fifth month,[3] but Mr. Treacher Collins advises not earlier than the tenth month. "At an earlier age," he says, "the cornea is so small and the anterior chamber so shallow that the necessary instrumentation cannot be so satisfactorily carried out as in a more fully developed eye. Moreover, the amount of aqueous humour is so small that it does not suffice for solution of the liberated lens substance." For the pathology and treatment of the different varieties of this condition we can think of no guide so good as the article from which the above extract is taken.[4]

THE SO-CALLED PEMPHIGUS OF THE NEW-BORN.

THE Central Midwives Board, after an experience of nearly a quarter of a century, has come to the conclusion that the verbal description of pemphigus supplied to midwives fails to carry an accurate picture of the disease to those who read it. The Board is therefore circulating to all midwives a pamphlet with the best coloured drawing that could be obtained. The plate is taken from the fourth edition of the "Atlas of Dermochromes."[5] The little booklet accompanying the plate points out the importance of strict surgical cleanliness and draws the midwife's attention to the rule compelling her to send for medical aid at once, as well as to notify infection to the local supervising authority, and to disinfect herself. Pemphigus of infants is quite unrelated to pemphigus of adults and is a grave coccal infection of the skin which frequently ends in death from septicæmia. It has, however, some obvious relation with the impetigo contagiosa and septic sores of various kinds from which the nurse, midwife, or other member of the family may be suffering. In a recent paper[6] Dr. H. W. Barber points out that the characteristic lesion of impetigo is a blister varying in size from a pin's head to a hen's egg. It is formed just beneath the horny layer of the skin and is due to the outpouring of serum from the superficial vessels. The blister becomes secondarily invaded with staphylococci, and soon become turbid. There is, however, some evidence that the eruption may sometimes be due to *Staphylococcus aureus* in the first place, and it is possible that a virulent coccus might, in the virgin soil of a new-born baby's skin, cause lesions of a different type from those seen in older children. The size of the blister depends on the situation in which it arises. Where the horny layer is thin, as on the face, it is soon ruptured; where it is thick, as on the palms and soles, the blister may reach an enormous size. The *pyogenes longus* type of streptococcus is usually benign, but in new-born babies is very serious, probably because the infant has no acquired immunity. The point to remember, says Dr. Barber, "is that pemphigus neonatorum has nothing to do with true pemphigus or with syphilis; it is contagious impetigo of the large blister or bullous type occurring in ea infancy." When these facts are taken into conside tion it is obvious that no person with active pyoge infection of the skin should ever handle an infa Dr. Barber relates a story of a medical man wi chronic impetigo who had consulted him, and w told him that three babies in his practice had recen developed pemphigus.

Modern evidence is, in fact, entirely in favo of identifying this disease with impetigo contagio As long ago as 1909 F. Foerster, after giving numero instances of its infectivity, has stated categorical "there now appears to be sufficient evidence at ha to warrant insistence on the proper recognition pemphigus neonatorum as simply a bullous infant variant of impetigo contagiosa and elimination of t confusing term *pemphigus* when this affection under discussion." Yet the term pemphigus l remained in use up to the present day. It is true th syphilis sometimes, though rarely, produces blebs the new-born, but so does the acarus of scabies, a if an ætiological foundation is to be the ultimate a of nosology, it seems a mistake to continue to us name which, as all authorities are agreed, ignores t experimental and clinical evidence of years. T origin of the name appears to be lost in antiqui Dr. Edward Rigby, in the *Medical Gazette* of 18 (p. 125), used the term "pemphigus infantilis," a in his text-book dated 1794 F. B. Osiander speaks "pemphigus neonatorum s. connatus." Foers states that the disease was first described by J. Oehme in 1773.

HYPOGLYCÆMIA IN SCLERODERMA.

WITH the development of biochemistry and progress of knowledge in the obscure domain endocrinology there is a growing and healthy tende for a closer coöperation between the general physici the dermatologist, and the laboratory worker for purpose of attack on pathological problems. Am these, although fortunately it is a rare disease, th is none more striking than the complex of sympto termed scleroderma. The various types of locali and diffused varieties have at least one symptom common—the thickening and induration of skin—but many of them are associated with p dromal manifestations that remind one of Raynau disease, or with abnormalities of pigmentati sensory disturbances, and general asthenia wh may recall the later stages of Addison's disease. was presumably this latter syndrome which has to the belief, both in this country and on the contin that a disturbance of endocrine function was an æ logical factor in scleroderma. The theory seeme receive a certain measure of support from the sym matic improvement that follows the administrat of thyroid gland extract in some cases, and this of treatment is nearly always prescribed. It however, doubtful if thyroid can exercise a spe effect, for the failures are much more numerous t the cures. In his scholarly report from the med clinic of the Johns Hopkins University Dr. W. Longcope[1] has brought forward evidence wh tends to show that the endocrine disturbance is n probably a secondary than a primary phenome in the evolution of the disease. In one fatal cas acute scleroderma in a young man the auto revealed atrophy of one suprarenal gland and in stitial orchitis. The author's view is that the in stitial changes observed in the skin in every are by no means confined to that organ, but ca demonstrated in the connective tissue and bl vessels of the other organs. Such a process exten into a suprarenal or thyroid gland must affect t functions and accordingly lead to disorders of mentation, asthenia, alopecia, and low blood press such as are commonly associated with the dis under discussion, as they also are with Addis disease. This explanation readily accounts for uncertain action of thyroid gland administrat

[2] Fuchs-Duane Text-book, eighth edition, p. 643.
[3] Surgery of the Eye, second edition, p. 206.
[4] The Ophthalmoscope, August and September, 1908.
[5] Jacobi-MacCormac Atlas of Dermochromes. Fourth edition. London: Wm. Heinemann (Medical Books), Ltd.
[6] Maternity and Child Welfare, 1927, xi., 378.

[1] Jour. Amer. Med. Assoc., Jan. 7th, 1928.

l the author uses it ruthlessly to explain the poglycæmia he discovered in one of six cases scribed. He points out that the fasting blood-gar is also low in Addison's disease, as Porges first scribed, and that the other symptoms of that dition bear a close resemblance to those of sclero-ma. If nothing very positive has emerged from s report, it will at least create fresh interest, and d us to regard with scepticism the almost accepted ology of scleroderma on an endocrine basis.

TUBERCULOUS INFECTION IN INFANCY.

USEFUL information has been obtained from an estigation [1] entrusted to Miss M. A. Asserson by New York Tuberculosis and Health Association. e three-fold object was to ascertain the incidence uberculosis among groups of infants in a large city, determine the relation of exposure to infection, and discover what was the significance and course of ection in very early life. The procedure adopted luded a study of hospital and clinic records, ering a period of five years, of all infants who had n treated at two hospitals for various ailments and o had had routine tuberculin skin tests at the time their admission. Skin tests were also employed to ermine the incidence of infection among the general ant population, being carried out both at clinics l at health stations. It was found that in the spital group 8·2 per cent. of cases (excluding those h tuberculous disease) gave a positive result, ereas the percentage at the clinics was 4·5 and ong the healthy babies at the stations it was only . This shows that tuberculin statistics based upon spital experience alone should not be accepted as olicable to the general child population. The rate positive reactions was higher in Manhattan than in nx, which is in agreement with the conclusions of Framingham investigators that the incidence of erculous infection is highest in poor districts. The t step was to ascertain the after-history of 460 spital infants who had yielded positive tuberculin ts, and the cases were divided into the following ups :—

.—Infants suffering from advanced tuberculosis (pul-nary, miliary, or meningeal), 112 cases. Of these, 96 per t. died soon after admission to hospital.

I.—Infants suffering from tuberculosis of bones and ts or glands, 32 cases. Of these, 32 per cent. were found e dead, of whom just over half were stated to have died n tuberculosis.

II.—These had yielded positive skin tests but no clinical dence of disease, 316 cases. Skiagrams suggested enlarge-nt of tracheo-bronchial glands in 61 cases. Of these, per cent. had died of tuberculosis, 14·5 per cent. from er causes. Of the remainder (207), 39 per cent. had died death was attributed to tuberculosis in only 3·7 per cent.

The conclusion drawn from these figures is that istance to tuberculous infection in infants is higher n is generally supposed, a poor resistance to erculous disease being contrasted with a vigorous istance to infection. Histories of exposure to ection are, of course, often unreliable, and attention lrawn to an investigation made by the New York berculosis and Health Association in 1925, when it s found that the hospital records of 135 cases of erculous meningitis stated that there had been posure to infection in only 19 per cent. of the total. re careful inquiries proved that 56 per cent. of the ldren had been contacts of sufferers from tuber-osis, which indicates how misleading perfunctory estions may be. Miss Asserson rightly insists that posure to infection should mean contact with persons o are suffering from " open " tuberculosis, and that e type and length of such exposure should be noted. mparison of contact and non-contact cases proves t the mortality from tuberculosis is exceedingly h among infants exposed to family contact with e disease. Infants not so exposed, who receive ection in a more casual or incidental way from tside sources, develop a surprising degree of resistance. This contradicts the opinion of those who maintain that since infection is inevitable its source is a matter of small moment, and that the privilege of motherhood should not be denied to a woman because she suffers from active phthisis. In this connexion it may be noted that of 40 infants who remained in contact with phthisical mothers 65 per cent. died of tuberculosis, while of 37 infants " boarded out " only one died of the disease though all had been infected. The highest death-rates were recorded among those who had been exposed to infection at earliest ages. Miss Asserson concludes that " Such unnecessary waste of infant life, as is shown in the deaths of the 120 infants in this study who died of tuberculosis, the majority because they were continuously exposed to the disease, must make us pause to consider whether or not we are facing and assuming a responsibility which rests upon us to protect the most susceptible of human beings from this preventable disease." The question is equally pertinent on the two sides of the Atlantic.

[1] Amer. Rev. of Tuberc., 1927, xvi., No. 4.

FASTING BLOOD DONORS.

IT has long been recognised that the reactions which may occur after blood transfusions can be differentiated into those caused by the group peculiarities of incompatible bloods and those due to some other undetermined cause. The former are sometimes very serious, but fortunately rare ; the latter are relatively common in some operators' experience, but are hardly ever serious, even if distressing to the patients. Many different causes have been assigned for the lesser reactions—e.g., sodium citrate, cooling of the blood, use of rubber tubing, destruction of leucocytes—but none has seemed to be conclusive, and the hunt has continued. A new hare has lately been roused by Drs. Brem, Zeiler, and Hammack,[1] at Los Angeles, which may reward pursuit. These observers had occasion to administer nine transfusions over a period of six years to a patient who suffered from a bleeding duodenal ulcer. After some of the transfusions he had somewhat severe reactions, after others he had none. An attempt to discover the reason for the different results revealed the fact that a reaction appeared to follow the use of a recently fed donor, but that it was absent if he had fasted. The suggestion is therefore made that the reactions may be due to the toxic effect of products of digestion in the donors' blood, and that a donor should avoid all protein food for some hours before giving his blood for transfusion. The suggestion is obviously still in the realm of speculation, the number of observations so far made being very small.

[1] Amer. Jour. Med. Sci., 1928, clxxv., 96.

NURSES IN MISFORTUNE.

TO make provision for old age, to prepare a few defences against misfortune—these are wise precautions for all who earn their living. Nowadays this is so generally recognised that many forms of employment carry an obligation to subscribe to pension and insurance funds, and a feeling has arisen in consequence that only the improvident can find themselves in destitution. But the solicitude of employers and facilities for self-protection have not always been what they are to-day, and in certain walks of life there are survivors from another epoch whose unhappy condition, made worse by the war, demands generous assistance. In considering the hard lot of the women to whom attention is directed by the Nurses' Fund for Nurses, it will be remembered that those who entered the nursing profession 30, 40, and 50 years ago were little encouraged by the hope of a comfortable life or adequate remuneration. Most of them must have begun their work from a desire for useful service, and some of those who have most conspicuously failed to help themselves have done so because their heart was in helping others. For this reason we have watched with sympathy the scheme of relief started by Miss S. Bulan and carried on under

difficulties during the past two years. The *Nursing Times*, of which she was until lately the editor, has recorded week by week an admirable attempt to find the most unfortunate members of the nursing profession and give them whatever help was possible. Though money is not always their only, or indeed their chief, need, this work has involved a good deal of expenditure, and since the fund established a home in Clapham where aged nurses may live without anxiety for the future, its financial responsibilities have been heavy. The original intention was to ask subscriptions only from members of the nursing profession, and the £3127 so far collected has largely come in small sums from that source. But there is so much more to do, and so real a need for money that the fund's promoters would be grateful for help from other quarters. Patients sometimes ask how they may express thanks for careful nursing, and this appeal suggests a way which may commend itself. Some of our readers, too, may themselves be under an obligation which they would like to recognise by contributing to the fund. Condescension, begging, over-organisation, and the other incidentals so often associated with giving money are none of them in question here; for it will be long before the community ceases to be in debt to the nurses—especially, perhaps, those of the last generation—and anyone who sends a subscription to the hon. secretary of the fund (c/o the *Nursing Times*, St. Martin's-street, London, W.C. 2) may rest assured that it will be used with understanding.

The Services.

ROYAL NAVAL VOLUNTEER RESERVE.

Proby. Surg. Sub-Lt. E. C. W. Maxwell to be Surg. Sub-Lt.

ROYAL ARMY MEDICAL CORPS.

Capts. C. A. Slaughter (Prov.), H. A. Boyle, and T. E. B. Beatty (Prov.) to be Majs.

Temp. Capt. J. R. P. Allin relinquishes his commn., and is granted the rank of Maj.

Lt. A. E. Campbell to be Capt.

Temp. Lt. J. W. Kendall to be Lt. on prob., and relinquishes the Temp. rank of Lt.

Lt. (on prob.) J. H. Anderson, from the secd. list, is restd. to the estabt.

ARMY RESERVE OF OFFICERS.

R. W. Agnew to be Lt.

SUPPLEMENTARY RESERVE OF OFFICERS.

A. Roberts to be Lt.

TERRITORIAL ARMY.

Maj. C. Douglas, T.D., having attained the age-limit, is retd., and retains his rank with permission to wear the prescribed uniform.

Capt. D. C. Bowie, R.A.M.C., to be Divl. Adjt. 54th (E. Anglian) Div., vice Maj. E. Phillips.

ROYAL AIR FORCE.

Flight Lt. H. Penman is granted a permanent commn. in this rank.

INDIAN MEDICAL SERVICE.

Temp. Lt. Devendra Nath Chakravarti to be Temp. Capt.

Temp. Capt. C. L. D. Roberts, whose relinquishment of temp. commn. has been notified, is granted the rank of Capt.

Capts. Shridhar Atmaram Phatak and R. A. Warters to be Majs.

Col. R. W. Knox retires.

DEATHS IN THE SERVICES.

Sir ROBERT PORTER, K.C.B., C.M.G., Director of Medical Services of the Second Army in France, who was taken ill with a commencing attack of pneumonia while awaiting the arrival of the coffin of his old comrade Earl Haig, at Westminster Abbey, died at his residence in Beckenham on Feb. 26th in his seventy-first year.

Modern Technique in Treatmen

A Series of Special Articles, contributed by invitatio on the Treatment of Medical and Surgical Condition

CCLXV.

TREATMENT OF DISTURBANCES INCIDENTA TO EARLY MENSTRUAL LIFE.

IT is of considerable importance to a girl that h guardians and medical adviser should realise that t menstrual function, from its onset, should be fr from any disturbance of a pathological nature.

I will not refer to the physiological changes whi take place at puberty, except to those which a sometimes treated as though they were abnormalitie The pathological disturbances may be consider under the following headings: Primary Amenorrhœ Secondary Amenorrhœa, Dysmenorrhœa, Menc rhagia, Neurotic Disturbances.

Primary Amenorrhœa.

It is sometimes difficult to decide if a case is o of primary amenorrhœa or of delayed developmer If a girl has not begun to menstruate by her sixteen birthday it is usual for the mother to seek advic This delay in the onset need not in itself cause anxiet In my experience the age of onset has varied betwe 8 and 19 years, and in both extremes normal woma hood has supervened. In all cases, however late t development, some growth, both in height and weigh has occurred for at least a year after the first menstru period. This fact may be helpful in prognosis.

Before one is justified in reassuring the moth with regard to a girl over 16, in whom the mens have not appeared, the following particulars should ascertained: 1. That the health is good. 2. Th the secondary sexual characteristics have develope 3. That growth is continuing, and that there is sudden fall in the *rate* of growth, especially with rega to weight. 4. That there is no abnormality found medical examination. This should include inspecti of the hymen and a pelvic examination per rectu by which any gross abnormality of the genital orga may be excluded. It must be remembered that atres of any part of the genital canal may be the cause apparent amenorrhœa.

If all these conditions are satisfactory it important that both mother and daughter should ha their minds set at rest, and be told that no treatme is necessary. If, on the other hand, the girl is in go health, but growth appears to have stopped, or to definitely diminishing in rate, a more serious view mu be taken, and an attempt should be made to stimula development of the generative organs by endocri therapy. Treatment by small doses of thyro substance (with or without anterior pituitary) or multiglandular tablets, is sometimes followed short by further growth and the onset of the menses. B it seems impossible to know if, in these rare cas the course of nature has been affected by such ther peutic measures, especially as it is not so ve uncommon for growth to stop for a time and then recommence without any medical interference. cases where secondary sexual characteristics have n developed before growth has ceased I have seen sign of development of the sexual organs aft prolonged treatment.

Secondary Amenorrhœa.

In addition to the minor irregularities of periodici so common during early menstruation I have notic three types of secondary amenorrhœa in young gir

Type 1, in which amenorrhœa, lasting six mont or more, sets in after the first few periods. This of frequent occurrence in children who begin menstruate early—at the ages of 10, 11, or 12—a must be of developmental origin.

Type 2, in which amenorrhœa, lasting for three nine months, occurs in girls in whom regular menstru tion has been established for some years. Th

enomenon is common in those who have experienced me change in environment. The same thing may cur after a shock or an operation on any part of the dy, and is probably due to an upset of the endocrine lance due to emotional disturbances.

Neither of these two types of amenorrhœa is sociated with anæmia or ill-health. No treatment called for except to reassure a nervous patient.

Type 3.—The third type of amenorrhœa has a eater significance. It occurs too late to be of velopmental origin and is not associated with ange of environment. In young women of 17 or er in whom pregnancy, anæmia, tuberculosis, or her specific disease, both local and general, can be cluded, the onset of amenorrhœa, especially if it associated with insomnia or other symptoms of urosis, cannot but give cause for anxiety, since the ndition is not infrequently linked with a morbid ychology and may even be a forerunner of insanity. ese are cases in which glandular treatment may have definitely beneficial effect. The administration of yroid substance (a quarter or half a grain daily) d of small doses of multiglandular preparations has en followed by the recurrence of regular periods and increase in the general welfare of the patient. But apses may occur if the treatment is discontinued d administration of the remedies must go on for an definite period.

Dysmenorrhœa.

This term is here used to mean any suffering finitely associated with the menstrual period. eatment in the first place should be prophylactic d the measures I would advocate are: (1) That all ls be taught that menstruation is a natural function d should not involve any pain or disability, and that change need be made during the period in their dinary habits with regard to baths and exercise or ain-work. (2) That school authorities be urged to scind rules restricting the natural activities of ildren during menstruation, and that cycling, mnastics, and games, such as hockey be allowed.) That employers of young women engaged in dentary and standing occupations be urged to ovide opportunity for daily exercise, such as illing, the exercise to be continued throughout the riod. This has proved to be of mutual advantage employer and employed in factories.

When dysmenorrhœa has become established the eatment I adopt, after assuring the patient that her ffering is unnecessary, has a two-fold object:) To stimulate the circulation of the blood in order relieve the hyperæmic uterus. The quickest means doing this is a hot bath; the more lasting measure is gorous exercise. (*b*) To direct the patient's attention from herself by providing interesting occupation. ence games or active work are preferable to set ercises.

The most beneficial exercises are those involved in: cking up objects from the floor and placing them on shelf above the head; kneeling and swinging the nds round alternately as if polishing the floor; uatting on the floor and bending to and fro, as in wing; and standing and doing swinging movements, in driving a golf-ball. All these movements can be ecuted in a small bedroom and if they are practised r 10 to 15 minutes daily for a week before the onset, d continued throughout the period, the pains will t develop or will be so slight as to be negligible. In vere cases the exercises may have to be repeated ring the day. After three months they can nerally be relaxed with impunity. For nervous tients it is useful to prescribe a sedative, such as b. acetanilid co. (B.P.), to be taken thrice daily the day preceding and for the first two days of e period. In no case do I consider that the operaon of dilatation, with or without curetting, is stifiable treatment for dysmenorrhœa in a young rl whose generative organs are healthy.

Menorrhagia.

Uterine hæmorrhage, severe enough to be called enorrhagia, is rare in young girls. The flow is sometimes rather excessive for a few periods, and, until the normal loss is established, outdoor games and sports during the period must necessarily be restricted; but they should be replaced by exercises at home suited to the severity of the condition. The exercise in the kneeling position is useful for this. In cases of true menorrhagia, where the periods, previously normal, have become persistently prolonged and the flow excessive, the cause in young girls is generally a toxæmia. A septic focus should be looked for and can often be found in adenoids, tonsils, or teeth, or in a chronically infected appendix. Severe constipation may be the sole cause of the trouble even when regular evacuations are reported.

Neurotic Disturbances.

The occurrence of irritability, increased emotionalism, depression, and other symptoms of nervous instability during the menstrual period has, I think, been over-estimated. These symptoms are certainly rare among girls who are expected by their elders to remain well during the period, and are often only detected by those who expect to find them. It is found that teachers who have not been informed are not, except in rare instances, able to detect when their pupils are menstruating. Nevertheless this type of neurosis certainly exists, and the victims can generally be cured by what might be called "verbal treatment." I have usually found it successful, and there is no doubt that in many the nervous disturbance has in the first place been induced by suggestion. Who would not be depressed on being told, at the age of 13, that, in future, she would be an invalid for three days every month? Prevention is therefore in most cases dependent on a sensible upbringing. When there is pain or discomfort the presence of neurotic symptoms is not surprising and the treatment for both conditions is the same—namely, employment in some interesting active work or game. It is for the purpose of discouraging introspection, which leads to these neurotic states, that I advocate outdoor games or active work rather than set exercises as a cure for menstrual disorders.

ALICE E. SANDERSON CLOW, B.Sc., B.S., M.D. Lond.
Cheltenham.

DONATIONS AND BEQUESTS.—Among other bequests Mr. Francis Stanley Holland, of Hove, Sussex, and Eastcheap, London, left £1000 to the Royal Sussex County Hospital.—Mr. Walter Skaife, of Southend-on-Sea, who left £35,707, on his wife's death, after certain legacies, left the ultimate residue of his property equally between St. Bartholomew's Hospital, Dr. Barnardo's Homes, the London Hospital, and the Victoria Hospital, Southend-on-Sea.—The Liverpool University Students' "Panto Day," after the deduction of £400 for expenses, yielded £5000 for the city hospitals.—The late Mr. Edwin Pope, of Dorchester Brewery, has bequeathed £5000 to the Dorset County Hospital.—The late Mrs. Clarissa Ellen Slyman, of Thorncliffe, Urmston-lane, Stretford, Lancs, left among other bequests £1000 each to St. Mary's Hospital, Manchester, and St. Dunstan's Blinded Soldiers' and Sailors' Hostel; £350 each to the Royal Infirmary, Manchester, and Dr. Barnardo's Homes; and £250 to the Liverpool, the Devonshire Hospital, and Buxton Charity, Buxton.—Mrs. Mary Jane Bradley, of Lyndhurst, Huby, Weeton, Harewood, Yorks, left by her will £1000 to the Leeds General Infirmary in addition to bequests to other charities.—Mrs. Adelaide Florence Henderson, of Rosebank House, Wick, left £15,000 and her residence Rosebank and ground therewith to the Wick and Pulteney District Nursing Association, to establish, equip and partially endow a nursing home in Wick in memory of her sisters and herself, to be known as "The Henderson Memorial Nursing Home," the interest of £2000 towards the running expenses of the ambulance car she lately presented to the County Council, £500 each to the Nicholson-Mackenzie Hospital, Strathpeffer, and the Bignold Cottage Hospital, Wick, and part of the residue of the estate to the Sick Children's Hospital, Edinburgh.—Mr. Alfred Ernest Briggs, of Low Moor, Bradford, Yorks, left £500 to the Bradford Royal Infirmary and the ultimate residue of his estate in trust for the erection of almshouses for the poor of Low Moor.—Mrs. Laetitia Elizabeth Beeston, of Clevedale, Winchester, left £1000 to the Royal Hants County Hospital and £1000 in trust.

Special Articles.

A COMPARISON OF COMPULSORY SICKNESS ASSURANCE IN VARIOUS COUNTRIES.

THIS volume [1] is the outcome of the decision of the International Labour Conference in 1925 to collect and publish information on the progress and working of social insurance. It presents the results of a systematic examination, based on facts obtained from 24 countries, of the essential aspects of compulsory sickness insurance considered under the following headings: scope; benefits; financial resources and their management; institutions and supervisory authorities; disputes, judicial authorities, offences and penalties; the situation of foreign workers. The labour involved in the preparation of the book must have been enormous, for it has been necessary "to summarise 350 laws and regulations, 220 reports of various kinds (representing tens of thousands of pages of legal or technical works, and thousands of statistical tables) written in some 15 languages." The result is an octavo volume of nearly 800 pages presenting a systematic review, unique in its range and authority, of the present position of compulsory sickness insurance throughout the world. Though packed with facts and figures, the matter is so methodically and conveniently arranged that the inquirer can readily pick out any particular kind of information he may require. To those interested in the promotion of the public health it is an invaluable document.

Compulsory insurance against sickness is a comparatively recent addition to the measures taken by the modern State to promote the health of its members. It began in Germany in 1883, and was first applied only to certain industrial groups, to which large additions were made in 1885 and 1886. The example of Germany was followed by Austria in 1888 and Hungary in 1891, but it was not until the twentieth century that any considerable extension took place. Since the war progress has been rapid. The movement has spread beyond Europe; Japan adopted compulsory insurance in 1922 and Chili in 1924, and it is probable that other countries will follow in the next few years. As might be expected, there are wide variations in the insurance schemes in operation in the different countries in regard to the classes of persons insured, the methods of administration, and the character and extent of the benefits. For instance, the proportion of insured persons varies from 3 to 35 per cent. of the total population, and from 15 to 86 per cent. of the employed population. The scheme may apply only to workers in certain specified callings—e.g., to miners or seamen, or to those employed in undertakings of a certain size or exposed to exceptional risk of disablement. In some countries agricultural workers or domestic servants are excluded. There are similar variations in the methods of working the various schemes and in the benefits conferred by them.

Modern Tendencies of Sickness Insurance.

But when the schemes are considered as a whole certain broad lines of tendency emerge, and it is because of the material it offers for the examination of these tendencies that the present volume is chiefly of value to the student of social conditions. It would seem that compulsory sickness insurance once established tends generally to develop on certain lines. Occupations at first excluded from the scheme tend later to be included in it. In the last 15 years no less than ten countries have brought agricultural workers within the scope of compulsory insurance, and th exclusion of domestic servants and temporar workers has in most countries been removed. In shor compulsory sickness insurance tends to cover the who class of wage-earners, including non-manual worke of small means. On the other hand, voluntary insu ance shows no tendency to extend. Many compulsor schemes have a voluntary side, but with ra exceptions it has attracted very few entrants. Great Britain the number of voluntary contributo was insignificant before the Widows', Orphans,' ar Old-Age Contributory Pensions Act offered addition and substantial advantages to the insured populatio

It is, however, in the development of the benefi given by the various schemes that the most inte esting tendencies of modern sickness insurance emerg In determining the nature of the benefits two polici may be adopted. One is to grant the disabled insure person a benefit in cash, so that he may purchase wh he thinks he requires, within the limits of the su available. The other is for the insurance institutio to shoulder the responsibility of providing him wi what is essential to restore his power to suppo himself. In most countries both kinds of provision a made, but there is a strong tendency to develop th second policy and make benefits in kind mo important than benefits in cash. In the early da the chief object was to secure for the disabled work certain payments in place of the wages that sickne prevented him from earning. The insurance contrib tions were regarded as something in the nature savings deposited for the purpose of being drawn o on the arrival of a "rainy day." But this savin bank notion has developed into a much broad conception of insurance benefits and insuran purposes. Merely to provide the sick worker wi money to enable him to tide over a period of enforc incapacity is now generally regarded as an insuran function of minor importance. The modern aim is effect a complete and rapid restoration of worki capacity and to provide whatever may be reasonab necessary to attain this aim.

Medical Services.

From this point of view the provision of medical ca is obviously essential, and it is important that t doctor should be available at the earliest possib stage, when the prospect of care is most promisin There are very few schemes of sickness insurance th do not provide medical treatment, and in nearly countries it is available upon entry into insuran without a waiting period such as is required befo cash benefits can be paid. There are variations in t range and nature of the medical provision made, b the general practitioner is the foundation upon whi all the systems of medical services rest. He is ever where the first and most essential element. B specialist services are also widely provided. In so countries—e.g., Germany, Austria, Czecho-Slovak Hungary, and Poland—the insurance institutions a under obligation to provide specialist treatment, wh in most other countries such provision is option and the option has been widely exercised. Dent treatment forms part of the benefits given by most the insurance schemes, especially where the preventi value of dental services is most clearly appreciate Hospital treatment, including maintenance, thou usually an optional benefit, is very widely provide and the cost of removal is borne by the insuran funds and forms part of the benefit. Home nursing a form of special assistance provided in five countri

Family Provision.

Maternity benefit is an element of increasing impo ance in social insurance. In a few countries, as Great Britain, it takes the form of a cash payme only, but usually assistance in kind is also provide including the services of midwives, and, if necessar medical attendance together with any medici required. Admission to a maternity home may secured, and in many countries the insurance instit tions give to mothers who nurse their babies "nursing bonus"—i.e., a weekly allowance payab

[1] Compulsory Sickness Insurance. Comparative Analysis of National Laws and Statistics. International Labour Office Studies and Reports. Series M (Social Insurance), No. 6. Published in the United Kingdom for the International Labour Office (League of Nations) by P. S. King and Son. 1927. Pp. 794. 12s.

ually, for 12 weeks after the confinement. Maternity nefit is far from being restricted to insured women ; 14 countries it is given to the wives of insured men virtue of the husband's insurance, while in five untries the benefit is extended to other members the insured person's family—namely, daughters, nd-daughters, and sisters if they are dependent on e insured person and are members of his household. is extension is compulsory in Austria, Germany, and land, and optional in Czecho-Slovakia and umania.

The provision of maternity benefits for the wives d other dependent members of the insured person's usehold introduced into social insurance an element special significance. It gave expression to the nception that the real unit for insurance purposes not the individual worker, but the worker together th his family, and that no insurance system can be garded as complete that does not provide for the dical care of the insured person's dependents. is conception of the function of sickness insurance s made rapid headway since the war, and in most untries the provision of medical treatment for the pendents of the insured is either a compulsory or an tional benefit. Usually the dependents receive the ne range of medical services as the insured persons, t in certain countries such special forms of provision spa treatment or treatment and maintenance in valescent homes are reserved exclusively for the ured.

The social importance of this development is viously considerable and likely to have far-reaching ults. By making medical care freely available for children the influence of sickness insurance in the d of prevention has been greatly extended. The tor can be called in early, infection detected in an ly stage and brought under timely control, serious ease can be attacked in its beginnings when the spects of success are most promising, and skilled ice can at all times be secured during those critical ly years of life which have so important an uence on the health of the worker when he reaches period of productive activity. The preventive ect of family provision is fully realised by those ponsible for the administration of insurance emes on the continent, in which preventive work ds to take an increasingly important place. It is, fact, the latest and perhaps the most significant elopment of sickness insurance. In various ntries recent legislation has given the sickness ds wide powers to take preventive action, and many making extensive use of these powers. Health ruction is given by means of lectures, health ibitions, &c., and through the medium of the press the cinematograph ; antenatal consultations have n established, holiday camps for children organised, in various ways the funds participate in the fight inst tuberculosis and venereal disease and for the tection of child life.

The Organisation of Medical Services.

The book contains a chapter on the organisation of lical services which is of special interest to lical readers. In nearly all the countries in ch compulsory sickness insurance has been blished the institutions responsible for the ment of cash benefits are responsible also for the vision of medical services, although not infrequently duty is carried out not by the individual institus but by their federations. The most important ption is to be found in the British system, in which arrangements for medical treatment are made, by the approved societies, but by the insurance mittees. In Esthonia and Latvia the employers responsible for medical provision, while in Russia responsibility devolves upon the public health horities. On the continent the conditions under ch medical practitioners undertake service vary siderably, not only among the various countries, also within the same country, and there are lar variations in regard to the right of the insured on to choose his doctor. There appears to be a ving tendency for the insurance institutions to provide themselves with an elaborate medical equipment. The Berlin Federation of Sickness Funds has established 40 clinics, each being responsible for the treatment of the insured persons and their families living in a certain area. In Poland the sickness funds had by the end of 1924 no less than 312 clinics, 116 pharmacies, 55 hospitals, and 7 sanatoriums. Similar provision on an increasing scale is being made in Czecho-Slovakia. This subject might with advantage to the medical reader have been treated in fuller detail and with a critical discussion of the principles involved and the difficulties encountered, so that an unwary reader might not carry away an impression of a harmonious adjustment of varying interests which a closer acquaintance with local conditions might possibly modify.

It is impossible, however, to make even a cursory study of this book without being profoundly impressed by the magnitude of the social movement it describes. Compulsory sickness insurance has created a vast network of organisations endowed with wide powers and disposing of large funds. How to direct these immense new forces to the best advantage is one of the most important public health questions of the present day.

THE THIRD RACE BETTERMENT CONFERENCE.

FROM Jan. 2nd to 6th there took place at Battle Creek, Michigan, U.S.A., the Third Race Betterment Conference. The official purpose of these conferences is—

"to bring together a group of leading scientists, educators, and others for the purpose of discussing ways and means of applying science to human living in the same thoroughgoing way that it is now applied to industry—in the promotion of longer life, increased efficiency and well-being, and of race improvement."

As many as 60 addresses were delivered in the course of these four days by different speakers. The subject matter of the conference, as dealt with in these addresses, roughly falls into the following divisions: eugenics and heredity; public health, immigration, and longevity; nutrition; and a miscellaneous division comprising such heterogeneous topics as athletics for women, newer values in education, the therapeutic value of sunlight, the future of the Red Indians, the cultural value of advertisements, and the bearing of the conditioned reflex upon no less a subject than "moral hygiene." Only the salient points arising from these addresses can be dealt with here.

Eugenics and Heredity.

In the direction of "negative" or restrictive eugenics, an address was given by Dr. Paul Popenoe dealing with sterilisation in California. Up till January, 1927, 5000 sterilising operations have been performed in this State, 4000 of them in the State hospitals for the insane, and 1000 in the State home for the feeble-minded. There have been four deaths in the course of these operations—a man and a woman from ether anæsthetics, and two women from peritonitis. Apart from these official State-controlled operations, it is estimated that some 2000 women have been voluntarily sterilised in private practice. In Michigan, wherein there exist a minimum of 73,000 feeble-minded, sterilisation has been performed in 111 cases. Of this procedure, Dr. H. E. Randall said that no one expected, by it, completely to eliminate mental defect from the community since the condition was frequently "carried," in the genetic sense, by normal persons. Yet it was reasonable to hope that, by the process of sterilisation, the contamination of the general population with the taint of latent mental defect would, in course of time, be diminished. The reports upon patients operated on in Michigan do not bear out the contention that the measure promotes loose moral conduct and spreads venereal disease. Dr. Randall also says: "We have seen no improvement, as Steinach reports, in the direction of rejuvenating old men. Our own impression is that none have been made worse. All have recovered promptly and the operation has led to a cleaner moral life of the paroled."

Much evidence was advanced of the supposedly harmful influence on the national stock of differential fertility. Thus an investigation by Prof. Alsworth Ross revealed

"that the average number of children born into 100 dependent families of American stock was 2½ times the number born from 2200 families of the same stock who had a son, a daughter, a nephew or a niece in college." Prof. E. M. East also dwelt upon the dysgenic tendency of America's increase of population. He is of the opinion that this tendency can best be checked by "spreading a clearer genetic point of view among our physicians." Dr. E. J. Hickson, director of the Psychopathic Institute, Chicago, laid stress on the very close relation between the defective and criminal classes in his city, each of which classes amounts to some 2 per cent. of the population. But this 2 per cent. absorbs 35 per cent. of the gross taxes in addition to being a source of considerable anxiety to the remaining 98 per cent. Dr. Hickson's wide experience of this class of criminal defective has led him to advocate depriving it of political power by a system of proportional voting. In connexion with the relative influences of heredity and environment in the creation of criminal and defective types, there was some difference of view. Dr. Riddle, of the Carnegie Institute, advanced a plea for the foundation of another institute for the study of the influence exerted by environmental conditions upon hereditary characteristics. But Dr. Henry F. Vaughan, Commissioner of Health for Michigan, so doubted the value of improved "nurture" that he advocated sterilising burglars. He further urged that "those who show themselves, during school life, to be low-grade morons, should be desexed (i.e., presumably, sterilised) before the reproductive age."

Public Health, Immigration, Vital Statistics, and Longevity.

Dr. Alexis Carrel described his experiments on the immortality of tissues and argued that further progress in knowledge of cell physiology and of the chemistry of nutrition would lead to a prolongation of human life. A plea for periodic medical examinations of healthy people was made by Dr. Franklin H. Martin. He suggested that these examinations be made in the "standardised" hospitals of the United States, of which there are now some 1800. "Each hospital," he proposed, "volunteering to establish such facilities will be accredited as conducting a health inventorium." This scheme is being given careful consideration by the American College of Surgeons, of which Dr. Martin is Director-General. In a lecture upon a similar subject, Dr. Guy L. Kiefer said that certain life insurance companies were instituting regular medical examinations of its policyholders, the consequent lengthening of whose lives resulted in increased profits for the companies. And "a recent legislation Act in Michigan requires the physical examination of persons driving motor vehicles carrying passengers for hire. This brings another large group of persons into the ever-increasing orbit of periodic health examinations." Similar views were expressed by Dr. Eugene Fisk and Dr. James Glover. Proposals favouring the "positive" aspect of eugenics—implied in encouraging the fertility of the well-endowed—were limited to suggestions with regard to immigration. Upon this subject, again, there was division of opinion. Prof. East suggested that stricter medical examinations should be instituted in the "emigrating" countries of Europe with a view to excluding more effectively than is now done physically inadequate or defective types. Dr. Harry E. Hull, Commissioner-General of Immigration, held that Americans should encourage the immigration of "those Nordic strains of Northern Europe which in culture and rich heritage of tradition, contributed the most desirable material to our national structure." But Prof. Ales Hrdlicka expressed his disapproval of this partiality for Nordic strains in the following words: "In the last 15 years have been heard many alarms of the threatening deterioration of American stocks through the influx of the so-called 'inferior races' of white derivation. These threats have received no scientific foundation."

Nutrition.

A considerable amount of attention was accorded to this subject during the conference. By Dr. Arthur I. Kendall, dean of biology, Northwestern Medical School, it was argued that by the elaborate culinary preparation of foods were destroyed many strains of comparatively unresistant lactic acid-forming organisms which, in the human alimentary tract, oppose the multiplication of maleficent spore-forming organisms. Many resistant and pathogenic bacteria of this group were capable, as sole occupants of the alimentary tract, of seriously disturbing the normal "man-microbe balance." Several speakers stressed the plea, now reverberating through this country, for the consumption of more milk, wholemeal bread, fresh fruits, and green vegetables. Dr. Adolphus Knopf attributed the relatively high incidence of pulmonary tuberculosis among young women between the ages of 15 and 30 years to self-imposed habits of underclothing and under-nourishment which are inspired by a feminine fashion favouring a boyish appearance and figure. And Prof. Louis Howburgh warned his hearers against partaking of diets too rich in proteins. Diets, he said, containing 10 per cent. of tryptophane and cystine, were capable, in one week, of killing rats, in which were found at post-mortem, extensive hepatic lesions.

Popular Science.

Numerous miscellaneous addresses were delivered. Of these one deserves notice as illustrating a defect which inevitably creeps into popular semi-scientific conferences. The organisers of these conferences naturally strive to secure the support of eminent scientific men. Now the value to science of a given piece of research is by no means commensurate with its capacity to yield generalisations of popular interest. Having consented to make a contribution to the conference out of sympathy with its general aims, the scientific worker finds himself placed between the Scylla of delivering an address totally unintelligible to the bulk of his audience, and the Charybdis of having to distil from his theme, by some means or other, an argument relevant to existing social conditions. That this process of distillation may sometimes be somewhat forced was indicated, at the conference, by an address from Dr. W. N. Boldyreff upon "Some New Physiological Data as a Basis for Moral Hygiene." From the fact that "all vital phenomena should be classed under one of two groups—(1) useful or pleasant process, and (2) harmful or unpleasant processes," Dr. Boldyreff deduces the conclusion that "*temperance* should be the basis of our behaviour." Thus, at semi-scientific conferences with social aims, are "physiological data" stretched upon the Procrustean bed of popular demand.

SOUTH AFRICA.

(FROM OUR OWN CORRESPONDENT.)

Medical Practice by the Qualified and Unqualified

AFTER being before the House of Assembly for 11 years with various alterations and amendments the Medical, Dental and Pharmacy Bill has at last passed its third reading and been transmitted to the Senate, so that there is every prospect of it being placed on the Statute Book this year. Last year Dr. Malan, Minister of the Interior, by sheer perseverance advanced the Bill as far as the committee stage before the House adjourned, and had disposed of 75 of its 97 clauses. Among those first 75 clauses were the most contentious, including those dealing with the faith-healers, chiropractors, dental mechanics, &c., who flourish exceedingly in this country. A number of Members from the Platteland had not only espoused their cause for many years, but at last these Members seem to have realised the futility of their arguments.

When the Bill was resumed in the committee stage last week Dr. Malan moved a new clause obviously designed to placate the Platteland. This was to the effect that—

1. No person registered under this Act shall himself or attempt to make or to recover, or shall enter into agreement or associate himself in any way with any person for the purpose of making or fixing excessive extortionate charges for any services rendered or for article supplied or to be supplied by him by virtue of so registered.

2. Unless the circumstances are such as to render impossible so to do, every person registered under this shall, before rendering any service by virtue of being registered, inform the person to whom the service is rendered, or the person in charge of such person, of the which he intends to charge therefor (*a*) when so requested by any person concerned; or (*b*) when such fee exceeds that usually charged for the service.

3. Any registered person who contravenes or fails comply with any provision of this section shall be guilty of improper or disgraceful conduct within the meaning Chapter iv. of this Act, and it shall be the duty of the Council or the Board to take cognisance of and deal with such conduct under that Chapter.

Dr. Malan declared that the object of the Bill was not merely to place registered persons in a privi-

sition; its object was also, and principally so, to otect the public, and for that reason the amend- nt proposed aimed at preventing registered persons m charging exorbitant fees. The Medical Associa- n and prominent doctors had asked that the ond provision, quoted above, should be inserted the Bill. Several Members of the Opposition, wever, considered that it was a slight on the medical ofession, and a mere sop to the country Members, ose complaint last year was that the farmers are ng robbed by the doctors. Others maintained that, hough the standard of the medical profession in th Africa is admittedly high, there are exceptions, l that the provision is really intended to meet the e of those exceptional doctors who charge extor- nate fees. It was asked, "Who was to determine en a fee exceeded the fee usually charged?" and Minister replied that anybody who complained t the charges in any particular case were extor- nate could go to the court, and the court would rn a finding based on the usual charges in such es, as ascertained from the evidence of professional n of standing. It would be easier, however, if the lical Council as provided for in the amendment e put in a position to take cognisance of charges erally. The amendment was carried by 58 votes 31.

nother controversial point was a new clause uiring that in any case in which a patient dies r the administration of chloroform, the magistrate he district should hold an inquiry. It is difficult see the necessity for the clause, because under mon law there must be an inquest in all such es. However, the clause was adopted, Dr. Malan erving that although it was not perhaps necessary, ould do no harm.

question was raised concerning native men and nen herbalists in Zululand who had been licensed many years, and it was urged that the native ulation ought not to be deprived of such treat- nt, because often they had nothing else and could afford to pay for anything else. Dr. Malan arked that 2000 of these herbalists had been stered in Natal, or more than all the white doctors he country; yet there were none registered in Transkei, which seemed to manage very well out registration. He agreed that apart from native practitioners the natives had nothing. Government had, however, appointed a Commis- to go into the whole question of medical facilities natives, and he hoped something would come of it. he final hurdle to be cleared was an amendment behalf of dental mechanics, moving that nothing he relevant clause should debar them from prac- s which they had legitimately carried on in the . Dr. Malan declined to be shaken on this point, ving that the Select Committee had fully investi- d the whole question and had been practically nimous. The dental mechanic, he said, who ed to have the right to supply teeth on casts e by patients, had really been evading the law he past, and did not deserve consideration in the ent. The House adopted this view by an over- lming majority. The Bill as amended was oted, read a third time, and transmitted to the ate.

IRELAND.

(FROM OUR OWN CORRESPONDENT.)

Practice of Dentistry by Medical Men.

HE Dentists Bill was under consideration in the last week in the Committee stage. It had ergone several changes since it was introduced a ago. The most important of these was the omission he clause prohibiting the practice of dentistry by ical men qualified after the passing of the Act. Bill as it now came before the Dail provided that ibitions of the practice of dentistry or dental ery should not operate in the case of registered medical practitioners. Much to the surprise of the members of the Dail the Minister in charge of the Bill (Mr. McGilligan) proposed an amendment to this clause which would in effect have restored the original prohibition, though slightly modified. His amendment provided that a duly qualified medical practitioner who became qualified after the passing of the Act might practise dentistry and dental surgery to such an extent as was incidental to his practice as a medical practitioner, but not otherwise. The amendment was opposed by all the medical deputies present, and by many members in all parts of the House, and was defeated by a majority of 78 to 50. The opposition was based on several grounds. It was pointed out that there had been no case made for interfering prejudicially with the present privilege of medical men; that the question of defining what was incidental to medical practice would be a matter of much difficulty; that obstacles would thereby be placed in the way of dispensary medical officers giving necessary dental relief to the poor. Sir James Craig made a further point in suggesting that to limit the present privileges of medical practitioners in the Irish Free State would prejudice the agreement as to reciprocity in medical practice made between the British and Irish Governments. In his reply Mr. McGilligan combated this view, stating that reciprocity meant no more than that there would be no distinction between a medical man qualified in England and one qualified in Ireland. On the general question of the right of the medical man to practise dentistry, he stated definitely that it was his wish to deprive medical men of the large powers they held under the Bill in the practice of dentistry. Dental surgery had, he said, become a recognised profession, and it was time its position was made clear.

Mr. McGilligan carried another amendment dealing with the method of erasure from the register because of misconduct. Under the Bill the Dental Board should make investigations and report the result to the Medical Council, with whom would lie the decision to erase a name. The Minister's amendment removes from the clause all reference to the Medical Council, and leaves the decision as to erasure with the Dental Board. By another amendment the Minister removed from the Bill the minimum penalty (£50) for the practice of dentistry by an unqualified person, leaving the minimum to be fixed by the justice in each case.

PARIS.

(FROM OUR OWN CORRESPONDENTS.)

Results of B.C.G. Vaccination.

AN article by Prof. A. Calmette in the current issue of the *Bulletin*[1] of the International Union against Tuberculosis summarises the results obtained with the B.C.G. vaccine in protecting new-born infants against tuberculosis, from July 1st, 1924 (when the Pasteur Institute first placed the vaccine at the disposal of physicians and public health authorities), up to Dec. 1st, 1927. During this period 52,772 children in Paris and the provinces were vaccinated at birth with B.C.G. vaccine. 6219 were recorded as having tuberculous mothers or as living in tubercle-infected surroundings, and Calmette has followed up 5749 of these cases, the remainder being under the supervision of the health authorities in the Seine Inférieure, who have reported on them separately. Of the 5749 reported upon by Calmette, 3808 were vaccinated less than a year before Dec. 1st, 1927. At that date 118 deaths had been recorded amongst them, an infant mortality-rate of 3·1 per cent. The infant mortality-rate among non-vaccinated children in France is 8·5 per cent. The number of deaths presumably due to tuberculosis was 34, or 0·9 per cent., whereas the rate for non-vaccinated children exposed to tuberculous contacts varied from 24 to

[1] January, 1928. Paris: Secretariat of the Union, 2, Avenue Velasquez.

70 per cent. in France. Another 1941 children vaccinated between July 1st, 1924, and Dec. 1st, 1926, were aged between 1 and 3½ at the time of this report. Twenty-one deaths had been recorded in this age-group, of which four were presumed to be from tuberculosis. The general death-rate among them was therefore 1·2 per cent., compared with 1·6 per cent. for non-vaccinated children in the age-group 1–4, living in either healthy or infected surroundings. The tuberculosis death-rate was 0·2 per cent. On Dec. 1st, 1927, 917 of these children were between the ages of 2 and 3½. No death from tuberculosis had occurred among this group. 298 of them had been revaccinated at the end of their first year, but Calmette is doubtful whether this is really necessary. It now seems probable that immunity lasts longer than was at first thought. Observations on those children vaccinated by Weill-Hallé and Turpin in 1921 and 1922 and living in tuberculous surroundings, point to an immunity of at least five years' duration. This, Calmette considers, disposes definitely of the fear that the bacilli might recover their virulence and demonstrates the harmlessness of the vaccination with B.C.G. vaccine.

The statistics furnished by the Department of the Seine Inférieure are particularly interesting as this department has always had high infant mortality and tuberculosis death-rates. From Dec. 1st, 1924, to Dec. 1st, 1927, 1369 children were vaccinated at birth with B.C.G. There were 93 deaths under 1 year of age from general causes, of which 7 were presumably from tuberculosis. This gives an infant mortality-rate of 6·7 per cent. in the vaccinated group, compared with 13·4 for the department, and a tuberculosis death-rate of 0·5 per cent., compared with 8 per cent. for the age-group 0–1 year. 402 children specially noted as being in an infected environment were aged between 1 and 3 years on Dec. 1st, 1927. Only one death, from Pott's disease at the age of 17 months, was recorded among this group exposed to infection.

Disalbuminised Serums against Diphtheria and Tetanus.

The disalbuminised sera which the Pasteur Institute are now preparing according to Ramon's technique have some important advantages over the ordinary antitetanic and antidiphtheritic sera. These are that the quantity of the active substances injected (antitoxin) can be rendered more precise, that a large quantity of antitoxin can be injected in a very small bulk, and that there is a reduction in the frequency and intensity of serum reactions. The principle is as follows: the antitoxin is precipitated by the toxin; the precipitated element is centrifuged; the toxin and antitoxin are broken up by means of a weak acid, and finally the toxin is destroyed by subjecting the mixture to a temperature of 60° C., which leaves the antitoxin intact. The new sera have given good results from the point of view of cure, but they are particularly valuable for the prevention of diphtheria and tetanus. Experience with them affords us only matter for congratulation, since we no longer see those forms of serum sickness which so often followed injection and laid our patients low for several days.

Pre-operative Inoculation against Sepsis.

Except in cases where immediate operation is called for, surgeons in this country frequently prepare the ground, and increase the resistance of the patient by the use of vaccines. If the operation is septic, propidon is often used; it is a polyvalent stock vaccine, which has only one defect—namely, that it provokes reactions, not dangerous but somewhat violent. The same preparation may also be employed for aseptic operations, but where these involve the abdomen it is perhaps better to use autogenous vaccines made from the patient's own intestinal organisms. A drawback to these is the length of time required before immunisation is begun, and attempts are being made to prepare stock vaccines which will be equally effective in warding off sep due to bacterial invasion from the intestine.

The fashion of wearing short skirts, open shoes a silk stockings is responsible for the appearance o special form of erythrocyanosis, in which large pur indurated lesions are seen around and above t ankle, being especially noticeable towards eveni This form of erythrocyanosis must be related to t acrocyanoses; it is due to neuro-vasculo-humo disturbance, and is brought into evidence by co It seems to have some connexion with endocr disorders, either hypothyroidism (Leopold Lévi) ovarian deficiency (Maranon).

Favourable results with endocrine treatment ha been noted in a case of acrocyanosis in a man wh left hand was purple and swollen, and who h violent pains in the feet, which had been frost-bit during the war. A few injections of testicular extr caused the swelling to disappear, whilst the cyano diminished, and pain ended. This extract seems have a profound effect on disturbances of a nerv origin, though it can hardly be concluded that th acrocyanoses are due to orchitic insufficiency.

VIENNA.

(FROM OUR OWN CORRESPONDENT.)

Decrease of Goitre in Vienna.

Prof. Wagner-Jauregg (the latest recipient of Nobel Prize for medicine) recently read a v interesting paper before the Vienna Medical Soc on the effects of the campaign against goitre. Ac on his advice the Austrian Government issued in 1 for public sale specially prepared salt contain 5 mg. of iodide per kilogramme of sodium chlor The assumption was that every person consumes d on the average 10 g. of salt, so that his daily intak iodine would amount to 5/100 mg. It has appea however, that the actual intake amounts only 3/100 mg., because less than 10 g. are taken da Prof. Wagner-Jauregg lays stress on the fact prophylaxis, to be effective, must extend its ac not only to the patient, but also to parents or a to their germinal cells, for in districts where goit endemic even the newborn are subject to it. Furt more, prophylaxis should extend to the whole pop tion, the Swiss method of giving iodine to sch children not being reliable, as many affected per escape the treatment. A systematic investigation o school-children in Austria was instituted in 1923, v the iodised salt was issued to the population. children were classified according to whether goitre was absent, beginning or slight, manifes pronounced. In Vienna there were at that 65,766 boys and 66,724 girls between 6 and 14 y of age in the public schools. In 1927 the figures w 51,853 boys, 53,275 girls. In 1923 57 per cent. without goitre, but in 1927 69 per cent. between ages of 6 and 10 were free and 56·6 per cent. betw the ages of 10 and 14. The manifest cases in numbered 1·6 per cent. and in 1927 0·16 per cen children of 6–10 years; the figures for the age-g 10–14 years were 2·5 per cent. and 0·43 per respectively. This drop to a tenth of the original f amongst the younger children, or a sixth amongs older ones, can only be ascribed to the constant u the iodised salt (called here Vollsalz=full-salt). the group of commencing goitres the decrease is so marked (from 30·9 per cent. to 27·1 per cent.

A second remarkable fact is the drop in the nu of operations performed for this condition. In 1308 patients in Vienna underwent a goitre opera in 1927 the figure had fallen to 806 cases (40 per less). In the province of Lower Austria the fi were 152, against 123 (20 per cent. less). These show that the systematic use of "full-salt" is beneficial in suppressing the spread of endemic g There is also reason to believe that its use is a

ange an existing swelling from a "manifest" or pronounced" goitre to "slight" or "beginning" itre. At present only 43 per cent. of the Viennese pulation are taking the medicated salt continually their own accord, but all public institutions, spitals, asylums, prisons, charitable institutes, and phanages also use it, so that about 55 per cent. y be reckoned as definite "iodine eaters." Until w no convincing proof could be produced that the ake of iodine by parents renders their offspring e from goitre, but the fact that goitre is rather rare ongst the school-children of the lowest standards, o are coming to school this year, seems to point in s direction and will be thoroughly investigated.

Public Health Statistics for 1926.

In Vienna, with its population of 1,890,000 souls, re die on an average 70 persons daily, of whom ht are cremated and the remainder buried. The al in 1926 was 25,807 deaths (of which number 91 were cremated). There were only 23,078 live ths or, in other words, the loss of lives was over 0, and in 1927 this loss increased; in the first half he year it was 1800, and it was nearly double that 1926 at the end of the year (full figures are not yet lished). Analysis of the figures shows that the nber of deaths is fairly stationary, but the number irths is constantly diminishing. 1300 persons died suicide last year; 5277, or over 20 per cent. of the al number, succumbed to diseases of the heart and ulation; 3822 died from tuberculosis, and 3261 m neoplastic disease, while 2386 were victims of umonia. No fatal case of cholera, typhus, or all-pox has been seen in Vienna for three years, or Austria for two years. The increase in the number new growths and cardiovascular diseases is noted over the country; they account for some 25 per t. of all deaths, and are a source of great anxiety the public health officers. The number of medical ctitioners in Vienna in 1926 was 4375; in 1927 ad risen to 4430. Amongst them were 396 females. re are 3·5 medical men on an average per 1000 of population or 3·8 female doctors per 10,000 nnese women. The Krankenkassa have appointed women doctors for female members who refuse be examined by a medical man. The public bulance (first-aid society) intervened in 26,246 cases year, or 16 per cent. more than in the previous r. The number of attempted—or committed—ides amounted to 1916 cases, or, in other words, ry thousandth Viennese citizen tried to destroy iself last year. 311 persons suffered injuries in ne kind of athletics or sport and 456 persons had to treated owing to intoxication with alcohol, whilst 8 accident cases and 811 persons who collapsed in streets or elsewhere required the help of the bulance. Out of 130,878 births in the Republic Austria 3956 were stillbirths. In 124,160 cases lified or trained helpers were present; the remain-6218 births took place without doctor or midwife. illegitimate births in the Republic amounted to 245, or 27 per cent.

Dr. Doppler's Method of Producing Hyperæmia in Circumscribed Regions.

Public attention, as well as the interest of medical n, has been concentrated lately upon a method ised by Dr. Doppler, first assistant to the well-wn surgeon, Prof. Lorenz, which aims at producing improved function of glandular organs by causing fuse hyperæmia through dilatation of the afferent eries. Dr. Doppler observed three years ago that destroying certain branches of the sympathetic a ked hyperæmia could be obtained. He used this hod in a case of gastric ulcer after partial resection he stomach. The favourable result prompted him ise the method systematically in operations on the nach to prevent the formation of peptic ulcer so n observed after surgical interference. He painted appropriate arteries with a 7 per cent. aqueous tion of carbolic acid, which is sufficient to destroy the vaso-constrictors, whilst the vaso-dilators are not affected. The arteries appear permanently dilated, the organs become extremely hyperæmic, and their activity is increased. No evil results have been noted. Dr. Doppler is not prepared to say how long the effect will last. In his recent paper, read before the Vienna Medical Society, he spoke only of "reactivation of the entire organism" or certain parts of it which follows the "phenolisation" of the testicles (spermatic artery) or ovaries (art. ovarica), and did not speak of "rejuvenation." The methods of Steinach and Voronoff aim solely at increasing the function of the sexual glands. Doppler, however, recommends his method for the purpose of "reactivating" other organs also, especially the pancreas (in diabetic conditions). In a series of animal experiments in the Vienna Veterinary Physiological Institute Prof. Schwarz showed that the disturbed function of the pancreas can be permanently corrected by an increased supply of arterial blood. His method is based physiologically on the experiments of Dr. Leriche (Paris), who severed the sympathetic on the femoral artery; but there the dilators were also destroyed. More than 200 patients have now been treated by the new method, sometimes with wonderful results. Reports have been received that pyorrhœa disappears rapidly after Doppler's "phenolisation," and psychic disturbances have been beneficially influenced. If his observations and those of the clinic of Prof. Lorenz can be corroborated the ultimate results of this apparently modest addition to medical science may be incalculable.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED FEB. 18TH, 1928.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 369 (same last week); scarlet fever, 1871; diphtheria, 1472; enteric fever, 57; pneumonia, 1602; puerperal fever, 52; puerperal pyrexia, 112; cerebro-spinal fever, 14; acute poliomyelitis, 8; acute polio-encephalitis, 2; encephalitis lethargica, 27; dysentery, 10; ophthalmia neonatorum, 111. No case of cholera, plague, or typhus fever was notified during the week.

The cases of small-pox were notified from the following 23 counties:—London, 10 (Shoreditch 2, Southwark 7, City of Westminster 1); Bedford, 3 (Bedford); Chester, 1; Derby, 7; Durham, 93; Isle of Ely, 1 (Ely); Gloucester, 1 (Chipping Sodbury); Lancaster, 34; Lincoln, Parts of Kesteven 5, Parts of Lindsey 8; Norfolk, 4 (Norwich C.B.); Northampton, 1 (Northampton C.B.); Northumberland, 9; Nottingham, 19; Stafford, 17 (Stoke-on-Trent C.B., 2; Bromwich C.B., 1; Wolverhampton C.B., 2; Newcastle-under-Lyme, 12); Surrey, 2 (Guildford); Warwick, 2; Worcester, 1 (Redditch); Yorkshire, North Riding 15; West Riding 55; Brecknock, 6; Glamorgan, 30; Monmouth, 45.

The number of patients at the Infectious Hospitals of the Metropolitan Asylums Board on Feb. 21st–22nd was as follows:—Small-pox, 25 (6 of these being under observation); scarlet fever, 1737; diphtheria, 2599; enteric fever, 31; measles, 1440; whooping-cough, 181; puerperal fever, 18 (plus 16 babies); encephalitis lethargica, 76; poliomyelitis, 1; "other diseases," 34. At St. Margaret's Hospital there were 13 cases of marasmus and 13 babies (plus 10 mothers) with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns, including London, there was no death from small-pox, 3 (1) from enteric fever, 89 (44) from measles, 9 (4) from scarlet fever, 30 (4) from whooping-cough, 42 (9) from diphtheria, 50 (7) from diarrhœa and enteritis under two years, and 83 (5) from influenza. The figures in parentheses are those for London itself. The deaths from enteric fever outside London occurred in Nottingham and Huddersfield. Of the 55 fatal cases of measles outside London 7 were reported from Plymouth, 6 from Bristol, 5 from West Ham, and 4 from Manchester. The number of stillbirths registered during the week was 294 in the great towns, including 62 in London.

Correspondence.

"Audi alteram partem."

EUGENICS AND A NATIONAL STOCK-TAKING.

To the Editor of THE LANCET.

SIR,—I should like to emphasise the suggestion in your valuable leading article last week under this heading that the time has now come for the medical profession to take a deeper interest in genetic problems, and to coöperate in a wisely considered movement to find out how we stand as a nation in regard to the physical and mental qualities of our citizens, and to help forward a sound movement for eugenic reform.

In 1906, in a discussion on the biological foundations of sociology, I made an appeal that systematic instruction in the science of heredity and its application to human life should be included in the medical curriculum. In the Galton Lecture last week I again tried to point out that not only would the study of genetics gain from the utilisation of the unrivalled opportunities possessed by medical men for observing and recording the hereditary transmission of normal and abnormal mental and bodily characters from parents to offspring, and from generation to generation, but that medical science and medical practice would also profit from the wider knowledge so obtained of the influence of "the hereditary factor in disease."

Every medical man who has seriously studied the problem of immunity, innate and acquired, must have sometimes wondered why so much more attention has been devoted in the past to the investigation of the innumerable varieties of pathogenic and non-pathogenic organisms of disease than to the biochemical processes and the cellular activities by which the body tries to repel or to recover from disease. There can be little doubt that a deeper study of both racial and cellular heredity, and of innate capacity of resistance, would throw valuable light on this latter problem. But in order to bring about this change in medical education, a more sympathetic outlook towards genetics must first be secured in the General Medical Council, in the medical faculties in our universities, and in our medical schools.

It is somewhat difficult to fully realise the great advantage which would accrue to our nation and race if our medical profession, general practitioners and professors of medicine, all possessed a sound knowledge of genetic science. Such knowledge would enable them to act as skilled advisers to their patients in matters of the utmost importance from the point of view not only of individual, but of national and racial welfare. Preventive medicine in the truer sense must also depend largely on the application of such genetic knowledge to human societies. Moreover, statesmen and legislators, Government departments, and education and health authorities would be greatly assisted in trying to improve the conditions of life for the people if they could rely upon some well-established scientific knowledge of a biological kind concerning the effect of their schemes on the racial qualities of our people.

It will, I think, be admitted that some at least of our economic regulations and sociological methods are not founded on sound biological principles. They do not look far enough into the future. They are concerned too exclusively with the interests of the individual (in some cases the low grade, degenerate individual), and not enough with the ultimate influence of such schemes on racial welfare. Then there is the great problem of conception control—the world-wide experiment now going on, so potent for good and harm.

If, as I said in the Galton Lecture, it be true that adequate knowledge of the factors which affect fecundity and of the means of controlling conception, when used in a right way, are necessary steps in t evolutionary process whereby man will be enab to exercise a growing influence over human desti and by which also the possibility of increasing racial stock of innate capacity will be brought wit human control, then surely it is the medical pr titioners of the country who ought to study this v and complex problem in all its aspects, in order t they may guide the citizens of all classes along li calculated to promote racial as well as individ and national welfare.

It is only possible in this short letter to indic one or two of the many problems which depe upon the application of genetic knowledge to natio life. The question of racial deterioration and possibility of arresting the process of decline is of increasing importance, and my main object in Galton Lecture was to point out that we should wise as a community to take stock of our positi and that we ought to try to find out in what gro or sections of the population, bodily, and especia mental qualities, intellectual and moral charact and capacity for citizenship, show any signs improvement or decay. The question of the dif ential birth-rate, and of the disastrous effect wh breeding from inferior and degenerate stocks, continued long enough, and on a sufficiently la scale, must exercise on the racial qualities of population, while of great national importance, also one in which the medical profession should deeply interested. Medical men must be especia concerned in advising their patients about important question of marriage from the euge point of view, and doctors, perhaps more intimat than others, are in a position to see the disastr effect of mental defect and other innate disabili and diseases which arise from, or which may accentuated by, the marriage of persons who are subjects of hereditary disease, or who come fr degenerate stocks.

In thanking you for your appreciative and criminating leading article, may I also express hope that it may lead to a wider interest in gen and eugenic problems on the part of the med profession in our own and other countries, and to the inclusion of some systematic instruction genetic principles in the medical curriculum.

I am, Sir, yours faithfully,

Leicester, Feb. 27th, 1928. C. J. BONI

TRANSPLEURAL EXPLORATION OF TH ŒSOPHAGUS.

To the Editor of THE LANCET.

SIR,—We should like to support the plea of Romanis and Mr. Neilson (THE LANCET, Feb. 2 p. 386) for transpleural exploration of the œsopha and to welcome the signs of coöperation between general surgeon and the laryngologist in the atte to secure earlier diagnosis of carcinoma. One o (A. T. E.) has used the artificial pneumoth method for exploring the thorax for the past five ye and in our experience also it is easy to expose c pletely all parts of the intrathoracic course of œsophagus. For the upper and middle parts easier approach is from the right side; for the lo from the left. Whilst it is quite possible to get g access without removing a rib, it is an advantag excise a very small segment of one, or possibly t behind the angle. Removal of a growth is a form able business even when feasible—our only case actual removal died within 12 hours of shock— given earlier diagnosis, and increased familiarity whole team with the operation, we believe that suc will sometimes be attained. Exploration as such be conducted with little if any more danger than exploratory laparotomy, and the route certai opens up possibilities for the more efficient use radium in the cases unsuited for removal.

We are, Sir, yours faithfully,

E. ROCK CARLING,

London, Feb. 28th, 1928. A. TUDOR EDWARD

THE EMPLOYMENT OF TUBERCULOUS PATIENTS.

To the Editor of THE LANCET.

SIR,—Dr. F. N. Kay Menzies's report on the nployment of tuberculous workers, which you mmarised in a recent issue,[1] will indeed have rformed a valuable service if it succeeds in attracting e attention of public bodies to the work being done this field. It is most difficult to impress laymen th the facts that tuberculosis is a fluctuating and fectious disease, and that it is far more dangerous health and home than any foreign enemy. In nsequence, and largely also because its outward and sible signs do not excite compassion, the public are mewhat apathetic about it, and quite fail to realise at "after-care" is indispensable to every form of e treatment of tuberculosis.

One of Dr. Menzies's points seems, however, to be en to question. He states that "a commercial dertaking employing tuberculous employees and ying a wage adequate for their maintenance cannot run without serious financial loss. . . ." The perience of Papworth does not bear this out. pworth industries are a commercial undertaking, ploying tuberculous employees and paying a wage equate to their maintenance, and the average net s per employee per annum, calculated over eight ars, is not more than £3 or £4. This is likely to be creased as the industries extend; and would almost appear if adequate capital were available. If this considered serious financial loss, there is only this be said: How much greater would the cost be if se persons left Papworth, spread the disease, broke wn and had to be readmitted for a further period sanatorium treatment? In point of fact, if one of m were readmitted for a fortnight to a sanatorium ould cost more than to employ him in the settlement a year; and if he infected any healthy person as ll the cost of *not* keeping him in a settlement would come enormous.

In these calculations no charge in respect of capital ncluded. If it were, however, the cost per employee uld be greatly reduced. It is reasonable, therefore, contend that public bodies would find an investment village settlements most valuable; for though it uld yield no interest, it would save them large sums sanatorium charges on readmitted cases and pay idends of happiness to their beneficiaries. This er point is, I think, of some importance, though cannot be brought, unfortunately, into the scale inst pounds, shillings, and pence.

I am, Sir, yours faithfully,
P. C. VARRIER-JONES.

apworth Hall, Cambridge, Feb. 22nd, 1928.

PREVENTION OF DIPHTHERIA.

To the Editor of THE LANCET.

IR,—Dr. Massingham's letter in your issue of . 25th rightly records facts of much importance egards the validity of the Schick test, which await uture explanation and that suggested "further arch," to account for what are apparent "border- " anomalies in the rare instances of the reported rrence of clinical diphtheria in Schick-negative viduals, if indubitable and authenticated, as cases quoted are seemingly claimed to be. The ject finds reference in the Medical Research ncil's report on the "Prevention of Diphtheria," lished last May, and at the risk of trespass on r valuable space, quotation of a paragraph on e 15 headed "Occurrence of Diphtheria in the ick Negative," would seem appropriate.

view of a certain, if small, number of instances in h an apparently genuine Schick-negative reactor has reported to have contracted diphtheria, it would seem ssary to assume that the amount of antitoxin present—in the circulating blood—at any given time does not esent a fixed and unchanging quantity, but that varia- in *some* individuals may occur, and that in such cases contact with a massive diphtheria infection may be sufficient to upset the finely balanced defensive mechanism and to give rise to an attack of clinical diphtheria, though one usually modified in character. Such cases as have been reported require very careful and critical study before the diagnosis can be accepted as correct; first, as regards accuracy of technique and reading of the result of the Schick test; secondly, with reference to the clinical and bacteriological condition notified as diphtheria; and, thirdly, as to the antitoxin content of the patient's blood. The possibility of a carrier condition of diphtheria bacilli and supervening tonsillitis, due to some other organism, might well account for a case being notified as diphtheria, and so by casting suspicion on the true value of the test, lead to an imputation of fallacy. Whatever the explanation may be, however, the facts for and against suggested fallacy demand the strictest inquiry and unbiassed interpretation.

Further on reference is made to a few conflicting results quoted by Dr. B. A. Peters[1] in 1922 at Bristol, who pointed out then the possibility of fallacies as to the interpretation of the test, but at a later date suggested that although a Schick-negative result always indicated a comparatively high immunity, under the exceptional circumstances of exposure of fever hospital staff to virulent infection in massive doses, the negative response might not *always* mean *complete* clinical immunity.

Dr. E. H. R. Harries,[2] with his wide experience of the value of the Schick test, also recently made reference to similar cases (in a paper read before the Epidemiological Section of the Royal Society of Medicine, Nov. 25th, 1927) and was of opinion that they were instances of "diphtheria tonsillitis" in an immune, and that although following infection a membrane was visible on the fauces, it always presented the same characteristics, was very thin and easily stripped without leaving a bleeding surface—separating spontaneously to leave the fauces apparently normal—such cases never suffered from the toxæmia of diphtheria nor required antitoxin, as the faucial infection, acting as a secondary stimulus, very rapidly raised the antitoxic titre of the blood. To this category Dr. Massingham's cases very possibly belong.

I am, Sir, yours faithfully,
J. GRAHAM FORBES.

County Hall, S.E., Feb. 27th, 1928.

[1] THE LANCET, Feb. 4th, p. 246.

GASTRO-DUODENAL ULCERATION.

To the Editor of THE LANCET.

SIR,—In view of the convincing letters you have published from Dr. J. A. Ryle and Dr. T. Izod Bennett I had not intended to join in the discussion on this subject, but as Dr. A. J. D. Cameron suggests in your issue of Feb. 25th that Prof. MacLean was the first in this country to write on the intensive alkaline treatment of ulcer, I should like to draw his attention to a paper of mine on the Pathology, Diagnosis and Treatment of Gastric and Duodenal Ulcer, which appeared in the *British Medical Journal* of April 24th, 1920. I there stated that in common with many other physicians I had given alkalis for many years, but that after a visit to Sippy's Chicago clinic in July, 1919, I had used a modified form of his ntensive treatment, which I proceeded to describe in detail.

Three years later, in June, 1923, at about the time Prof. MacLean says he first gave alkalis to patients with ulcer, I had reason to believe that the treatment was already so widely used by practitioners throughout the country that I thought it right to publish in *The Lancet* and *British Medical Journal* a warning as to the danger of toxic symptoms. So far from being a "bogy which need not be feared," as MacLean and his colleagues state, alkalosis is a very real danger, especially in patients with any gastric stasis or with renal insufficiency, which may be so insignificent that it can only be recognised by estimating the blood-urea. I have seen one fatal case and several others have been reported. My colleague, Dr. J. F. Venables, described a series of severe cases of

[1] THE LANCET, 1923, ii., 784; and 1924, i., 821.
[2] Proc. Roy. Soc. Med., Dec., 1927, p. 197 and p. 210.

alkalosis following alkaline treatment of ulcer in the *Guy's Hospital Reports* for 1925. For some reason the condition has in my experience only occurred in private patients, which may account for the fact that Prof. MacLean has not observed it in his hospital unit, but it is none the less important for the practitioner to recognise the first signs of alkalosis so that the treatment may be discontinued without delay.

The correct dosage of alkalis is a very complicated physicochemical and biochemical problem, which is at present the subject of active investigation at Guy's Hospital. The value of the mixture recommended by MacLean is entirely due to the sodium bicarbonate and magnesium carbonate it contains, as the work of Mr. E. Matthews, which will be shortly published in our *Reports*, shows that bismuth carbonate is almost completely devoid of neutralising power. On the other hand, the 10 grains of sodium citrate, which MacLean, in common with most physicians, gives with each feed in order to prevent coagulation of the milk, has almost the same neutralising power as the 12 grains of sodium bicarbonate he gives every two hours.

Prof. MacLean writes, in reference to infected teeth, that "unless we are misinformed with regard to the general attitude of the profession on the subject, there is at present little risk of the teeth, septic or otherwise, being overlooked." From my experience I should say that he certainly has been misinformed, as out of 126 consecutive cases of duodenal ulcer at New Lodge Clinic 25 per cent. had well-marked pyorrhœa alone, 9 per cent. had apical infection alone, 40 per cent. had both, 8 per cent. were edentulous, and only 18 per cent. had healthy teeth. The corresponding figures for 30 cases of gastric ulcer were 23, 20, 21, 13, and 23 per cent. respectively.

I am, Sir, yours faithfully,

ARTHUR F. HURST.

New Lodge Clinic, Windsor Forest, Feb. 27th, 1928

MASTOID OPERATIONS.

To the Editor of THE LANCET.

SIR,—It is interesting to read in your current issue Sir Charles Ballance's retrospect. Doubtless he looked back and was influenced by his teachers when he designed his own operation. His, like theirs, seems to attract little attention in these days. On the other hand, I looked forward and was not at all influenced by the work of my predecessors when designing my method of operation, because I had learnt a great deal by observing Nature's attempts to cure mastoid disease, and based my technique on these.

Dr. Percy Jakins, of the Central London Ear and Throat Hospital, was the first surgeon to visit the Throat Hospital to see me perform one of these operations. He made this remark in the operating theatre: "Your operation will take the place of all Schwartze operations and most of Stacke's radical ones." Evidence of the soundness of his opinion was forthcoming last week, for on the 23rd inst. I performed one of these operations, exhibited a cured patient, and subsequently lectured on Diagnosis in Mastoid Disease at the Burton-on-Trent Hospital by invitation of the local Medico-Chirurgical Society. There I was informed that 76 mastoid operations had been performed in the hospital in the past year, that 74 of these were carried out by my method, and two by Stacke's (radical) method—the radical measure being adopted on account of the presence of cholesteatoma in the attic.

I may mention that many aural surgeons have informed me that they perform no mastoid operations except by my method; I hope, before long, that all large towns will be competent to deal with the ear diseases that occur in them.

I am, Sir, yours faithfully,

CHARLES J. HEATH.

Devonshire-place, W., Feb. 27th, 1928.

THREE CONCEPTIONS OF TUBERCULOSIS

To the Editor of THE LANCET.

SIR,—In his kindly criticism of my paper in you issue of Feb. 4th (p. 259), Dr. Blanford takes the vie that whenever symptoms and signs suggestive pulmonary tuberculosis are present the disease serious; the outcome cannot be foretold, an sanatorium treatment should be advised; but wit efficient medical examination this means sendi 30 to 40 per cent. of the population to sanatoria some time in their lives, most of whom would recov just as well at home. To-day the great majorit of these cases recover undiagnosed, there may suspicions in the practitioner's mind, but he hesitat to name the complaint until an exact diagnosis ca be made, which sometimes means that the disea is no longer "minor." In this way special treatme may be dangerously delayed in low-resistant patient If the real frequency of symptoms due to tuberculos were generally realised this diagnosis would be muc more common, based it is true on ground less su than at present, though just as scientific as mo other diagnoses in general practice. There wou then, I think, be more observation, people in tin would be less apprehensive, and special treatme more readily adopted.

An acute case is unsuitable for the sanatorium. is the border-line case with some resistance, but n doing well at home, that will benefit there, an nothing is lost for such patients by three month observation and treatment at home. There are, course, certain conditions which make immedia sanatorium treatment advisable:—

1. A positive sputum.
2. A bad family history.
3. Very bad surroundings.
4. Patient has not improved with home treatmen

The constant iteration that early cases must sent at once to a sanatorium has led to a false positio Some minor cases are sent there unnecessarily (so to be returned with the diagnosis unconfirmed), a in other instances the supposed necessity for such step dangerously delays the diagnosis. In deali with tuberculosis, the point where medical experien and skill are of the highest value is not so much making a diagnosis, but in deciding what should done for the individual patient. If the mere existen of tuberculosis necessitated sanatorium the matt would be simple, and the recent innovation of appoi ing junior men to act as school medical officer, welfa officer, assistant medical officer of health, *and tuberc losis officer* would be justified; but the matter is n so simple, and a lifetime is not too long to learn h to treat the individual patient.

The experience of the sanatorium officer is like to be wider, and his advice more sound, in deali with major tuberculosis, but the tuberculosis offi has the advantage in advising about tuberculosis met with in everyday practice.

I am, Sir, yours faithfully,

Paignton, Devon, Feb. 21st, 1928. E. WARD.

INCIDENCE OF THE MINOR PSYCHOSES.

To the Editor of THE LANCET.

SIR,—The views of Dr. T. A. Ross and mys are so much in accord that I can treat his letter your issue of Feb. 25th only as an opportunity defining my position when I challenge the curre usage of words like "neurosis." I am in agreeme with him as to the important difference between t groups that I call major and minor psychoses, a also as to the need for using words that our patien and their friends, will not misunderstand. I reg that the word "benign" did not occur to me inste of "minor," which was suggested by the Fren *petits mentaux*.

In talking to patients I have, like him, to acc their distinction between "nervous" and "menta and this distinction would be useful and harml if it were recognised that, like hysteria, some of th

rds do not mean what they appear to mean. The tory of neurosis, as shown by quotations in the ford English Dictionary, indicates a perversion of aning that has resulted in perversion of thinking. ginally it meant an interference with physiological ve function; lead colic was a neurosis, and a ter speaks of the functional disorders as including euroses, hæmorrhages, and dropsies." Then in 'seventies philosophical speculation led to the inition of a neurosis as "a change in the nerve ls of the brain prior to and resulting in psychic ivity," and this metaphysical conception became ked with clinical use so that we find Maudsley iting of "insanity, epilepsy, and other neuroses." ere was no objection to this use of the word as pressing the idea of one aspect of a condition or ion, the other aspect being the psychosis, so long it was not confused with the older meaning. It plied the axiom "no psychosis without neurosis." Now, however, obverse and reverse have become arate coins, and paranoia is a psychosis whilst obsessional state is a neurosis; I do not know y, and I do not think anyone else knows. To ny of us the label "neurosis" indicates a histo- hology, some change in nerve towards the discovery which our efforts should be directed. But our rts are not so directed. When my attention was ned to the study of miner's nystagmus—now ting us half a million a year—I could find no ord of any pathological investigation of that upational neurosis. The word is apparently not timulus to such investigation. On the other hand, loes serve the purpose of enabling us to turn aside m the psychological study of conditions which, my belief and the belief of Dr. Ross, can be use- ly approached by that route. Telegraphists' mp is called a neurosis and, until the investigation vas enabled to carry out for the Fatigue Board, iad no conception of the wealth of psychological terial that underlies the symptoms of that dis- er. Our text-books actually present students h speculations about the location of a lesion that ows one man to use the Morse key perfectly so g as it is attached to a recording tambour, but that ises cramp when he knows the key is attached to a graph wire; or allows another man to send ry combination of dots and dashes except those icating the hard-sounding letters C, K, and Q; produces painful cramp in another as soon as he down in the position of sending. Our connota- n of the word neurosis directly encourages the scription of *Linimentum saponis* for these vagaries behaviour.

These remarks apply to all those words, even the rd nervous, that imply a non-existent pathology. ewhere I have quoted approvingly the phrase of Johnson in a letter to Mrs. Thrale: "A tender, table, and, as it is not very properly called, a vous constitution." Dr. Ross has written an mirable book called "The Comm on Neuros s"; I ve written a book called "The Nervous Patient." ertainly bowed to custom in my choice of title, I probably Dr. Ross did likewise; my only claim superiority is that my idol was older than his.

This attack upon nomenclature is not in the interests inguistic purity, but is an effort to induce a more pful attitude towards what I shall still call, when rammelled by custom, the benign or minor choses. The word neurosis should be restored its original meaning; there is need for it in sifying such disturbances as hysterical dermato- phia, mucous colitis, some dyspepsias, tachy- dias and asthmas, where it may be convenient to sider them as disturbances of the physiological ction of nerve tissue.

n only one fact of observation do I find myself ering from Dr. Ross. Fear of the dark in childhood ot universal; I know intimately one child who er suffered from it and was perplexed and annoyed discovering it in a playmate.

I am, Sir, yours faithfully,

ondon, Feb. 27th, 1928. MILLAIS CULPIN.

CARBON DIOXIDE IN ANÆSTHESIA.

To the Editor of THE LANCET.

SIR,—Dr. Birt's letter in your last issue reaches conclusions regarding carbon dioxide in anæsthesia which are at variance with my experience. During three years I have used carbon dioxide in anæsthesia for some hundreds of major and minor operations in infants, children, and adults, and I regard it as a very important part of the anæsthetist's equipment. I invariably use a sight-feed bottle, usually a triple one (made by Coxeter), and with it I have complete control of the gas as well as considerable accuracy in its percentage, and very rarely has there been cause for the least anxiety in its administration. To be able to increase the respiratory excursion by means of a small percentage (1–5) of carbon dioxide and thus facilitate and hasten the induction of anæsthesia is of great importance, especially in infants and children whose tidal wave is relatively small. The benefit is not less apparent in adults where frequently preliminary morphia has depressed the respiratory centre. With carbon dioxide the great majority of such patients experience a rapid and easy induction of anæsthesia. In my[1] experience, except in old people, the rapid and complete elimination of the anæsthetic agent by means of carbon dioxide is a potent factor in convalescence.

I am, Sir, yours faithfully,

Aberdeen, Feb. 28th, 1928. J. ROSS MACKENZIE.

ULTRA-VIOLET RAYS AND VARICOSE ULCERS.

To the Editor of THE LANCET.

SIR,—In your report last week of a meeting at the Medical Society of London it appears (p. 392) that Dr. Heald, discussing recent claims that "varicose ulcers uniformly yielded to, and could be cured by, ultra-violet light," stated that Dr. Dora Colebrook, "following the exact technique of the man who made the claim," had met with complete failure. As several people, amongst them myself, have claimed that ultra-violet radiation was of value in the treatment of varicose ulcers, would it not have been more fair to have given the name of the man whose technique Dr. Colebrook followed? It would at least have given him an opportunity to reply. Moreover, to make a mystery of his identity is an unwelcome departure from the customary practice of giving references. There have been so many claims and denials as to the value of ultra-violet in the treatment of ulcers, that it would appear that the time has arrived for the subject to be given a full evening's discussion to itself. Hitherto it has but been mentioned in discussion on ultra-violet in general.

I am, Sir, yours faithfully,

London, W., Feb. 27th, 1928. M. WEINBREN.

[1] British Journal of Anæsthesia, October, 1926, p. 92.

MEDICAL PRACTITIONERS' UNION.—This Union held a dinner and dance at the New Princes' Galleries on Feb. 23rd. When the loyal toast had been honoured the health of the Union was proposed by Dr. Graham Little, who declared that the M.P.U. was fighting for some of the most important principles in medicine, and that in Parliament it was making history. The profession had at the present time a remarkable opportunity for usefulness to the community and for its own advancement and status, and it ought to be more united. Few doctors were willing to make the sacrifice of time, money, and effort necessary to hold seats in Parliament, but it was most important that they should be more adequately represented. Dr. E. A. Gregg, the President, in replying, said that he was more convinced to-day than ever of the need for his organisation, which was trying to do for doctors what no other professional organisation attempted. The M.P.U. wanted to emphasise first of all the doctor as doctor, and secondly to face the modern problems of the doctor's contact with the public at large. The health of the guests was proposed by Dr. G. de Swietochowski, and Sir William Arbuthnot Lane replied.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS

Health Insurance in Scotland.

On Thursday, Feb. 23rd, the House of Commons went into Committee of Supply on the Supplementary Civil Estimates, 1927, Captain Fitzroy in the chair.

On a supplementary estimate of £10 for the salaries and expenses of the Scottish Board of Health, including grants for National Health Insurance and other purposes,

Sir John Gilmour, Secretary of State for Scotland, said that since this matter had been very fully debated on the English supplementary estimate it would be unnecessary for him to go very fully into it. He would like to say, however, that it was a matter of very grave concern both to the approved societies and to the minister concerned that there should have been this very large increase in expenditure. The expenditure commenced to rise in 1926 very markedly after the stoppage in the coal industry and continued at an abnormally high rate until the end of 1926, necessitating a supplementary estimate in that year. It was expected that it would decline, but unfortunately that had not been the case. The expenditure on sickness and disablement benefit during 1927 was even heavier than in 1926. For example, after allowance for extra expenditure on additional benefits, if they took the index figure for 1925 as 100 the figure for 1926 was 113·5 and for 1927 117·75. It was very difficult to find any explanation of this high expenditure. Apart from an epidemic of influenza in March last year 1927 had not been an unhealthy year, whether it was judged by the mortality figures or by other standards such as the number of prescriptions issued by the medical practitioners in Scotland to their insured patients. It might be that those who had been out of work for some period through the long industrial depression might have sought this channel in increasing numbers to obtain relief. It was clear, too, that there was a great feeling of apprehension on the part both of the approved societies and those connected with them that the medical profession was not taking that amount of care in giving this relief that might be expected of them. Already the Scottish Board of Health had taken steps to call the attention of the approved societies to this huge increase and had been in consultation with the representatives of the medical profession. He would not say at that stage what steps in addition to those already taken could be taken to help in this matter, but it was clear that such steps as, for instance, not allowing the transfer of an applicant from one medical practitioner to another except within a certain period might have some slight effect. The period had already been increased and it might have to be further increased. In any case they would carefully watch these matters and in the long run, if there were flagrant examples of medical practitioners failing to carry out their duties reasonably, other steps would have to be taken. It was satisfactory that in asking for authority to meet this increased expenditure he was not asking the House for extra money. They had been able in the estimates which Parliament had already voted for his department to make certain savings upon the item of steel house construction. They had proceeded with 500 houses less than they intended, and it was proposed to transfer a portion of this saving to meet the extra expenditure under this vote which amounted to about £40,000.

Housing and Health.

Mr. James Stewart moved to reduce the vote by £5. He said that the need for houses was growing greater and greater in Scotland. There had been built from 1919 to the present time 67,000 houses, whereas in the nine years, at the rate of 20,000 houses per annum, there ought to have been built 180,000 houses. So the shortage had grown from 121,000 to nearly 230,000, not with an improved standard, but merely to keep things as they were. What was the use of increasing medical benefit, and spending more money in health administration when the problem which was the source of nearly all the troubles that beset them began in the house and ended in the house through the bad conditions which obtained? While it was true that their infantile death-rate this year was the second lowest in their history —namely, 82 against 79, their lowest—in other parts of the world, not more happily situated in regard to climate and other conditions than they were, the death-rate was ever so much lower. They were asked to accept that sort of thing as something with which they had got to be satisfied in spite of the tremendous development in medical science and the fact that their medical officers to their credit in every municipality in Scotland had year in and year out been drawing attention to the relationship between housing and health generally. In the densely populated quarters of Glasgow the infantile mortality-rate was three times the average for the city. In this way they were filling their hospitals and increasing their expenditure in every direct The Government must take a step forward to meet circumstances of the great industrial centres. In Glas over £600,000 had been spent annually on health admi tration of which a considerable proportion had to be by the city. This expenditure was ever growing, yet cause of it all was left practically untouched, nay, worse t untouched, for it was being allowed to develop int festering sore which was cutting off lives which could saved and which would perhaps be of great advantage to State in its hour of need, should that come again.

The Discretion of the Doctor.

Mr. Kidd said that there was only one point which m him a little suspicious of the Secretary for Scotland that was his reference to the extra cost incurred thro increased sickness. He would ask the right hon. gentle to remember that last year Scotland was still sufferin violent reaction from the coal stoppage, and incidentall had been the wettest season on record. The weather, ta in conjunction with the lowered vitality of the pe following the stoppage, readily accounted for the incre sickness. He would ask the Secretary for Scotland to slow to assume that medical practitioners in Scotland been a little too facile in allowing panel patients med treatment, or too slow in turning them off the list. ought seriously to hesitate before interfering with discretion of the doctor, because otherwise with whom the supervision to rest? Was the doctor to be superv entirely by official medical men representing the Minis or was he in order to support his case to have the assist of other panel doctors? He put that point the r anxiously because he had found cases where objection taken by a doctor to his being overridden on the questio the quality of the medicine he had prescribed. One did want to create the impression that there were two cl of patients, the patient who was on the panel and patient who was not, so far as the prescribing of medi was concerned. If they raised a question of that kind would bring the Insurance Act into disrespect and mal very suspect. The discretion of the panel doctor m not be exercised legitimately in every case, but he had h of it being challenged in the case of medical men w repute was beyond all doubt, and if they spread the that doctors had been slack they would start on a thorny p

Mr. Scrymgeour said he would like to know what evid there was in Scotland for this strange report concer medical men and the allegation that they were not pro looking after the interests of approved societies and funds through failure properly to supervise cases which c to them for treatment. There was a case in Dundee rece in regard to which the doctor according to his own expl tion to him (Mr. Scrymgeour) took very great care. doctor decided that a patient ought to be put off be because he conscientiously thought that she was abl resume work. As a matter of fact that was far from t the case, and the patient got worse. The doctor explained that if the patient had come back and said she could not manage to work he would have put her c benefit again. That was an instance which showed th doctor was over-careful in handling a case. He did think that there was any substantial ground for saying doctors were slack in attending either to the interests o patients or to those of the approved societies. If su state of things prevailed they would have very clear of it through representations made before the Insur Committee or to some of the approved societies.

Mr. Stephen said that the Secretary for Scotland ha evidence to show that the medical men in Scotland wer acting properly in this matter, and he hoped that House would think very seriously before they all the right hon. gentleman to impose new conditions o medical profession in order that doctors might be bu into sending people to work when they were unfit to v The increased expenditure was due to the failure of right hon. gentleman's own policy, and it was no us him to try to put it on to the medical profession. He wi to know why in Glasgow there had not been the re election of the medical panel in connection with he insurance? He understood that medical men in Gla had been pressing for that election and yet the Secretar Scotland had refused to have it. Evidently the right gentleman thought that he would be able to bully successfully in this matter.

Increased Independence.

Sir H. Cautley said he had been much interested in the Secretary for Scotland had said as to the steps that being taken to make the doctors more independent hitherto. The figures as to the increase in sickness disablement benefit during the last three years were serious. From his connexion with the working of approved societies he could say without hesitation tha doctor's position had hitherto been such that in num

s the desire to do his duty had brought him into conflict
n his patient, and that had placed him in a very difficult
tion. He had no charge to make against the doctors as
'hole. The cure for this thing, in his opinion, was to
ease the doctor's independence. He had long thought
there ought to be a period of time elapse before a patient
ld change his panel doctor.

r. WESTWOOD said that a complaint had been lodged in
erent parts of the country, and certainly in his constitu-
y, that medical men were forming themselves into a
ted liability company so that they could dispense the
licines which they themselves had prescribed. In the
inal Act it was laid down that a medical man should
, unless under very exceptional circumstances, dispense
own prescriptions. But the doctors were getting over
difficulty in the way he had mentioned. In the particular
e to which he had referred the prescription instead of being
ded to the patient was taken away by the medical man
self to be dispensed. He hoped that an inquiry would
made into this matter.

Reply to the Debate.

ir JOHN GILMOUR, replying to the debate, asked who
e the people concerned in sickness benefit? One would
gine listening to some hon. members that it was only a
y-hearted Government or the Scottish Board of Health.
people, however, who were as much concerned in this
ter as anyone were the administrators and members of
roved societies. The number of cases on which grave
bt had arisen as to whether excessive payments were
le or not had materially increased. In 1925 the number
ases referred for examination—that was cases upon which
bt was expressed—was 22,231. They rose in 1926 to
16, and they were as high in 1927 as 35,068. In regard
cases examined by the referee, in 1927 the medical
titioner's certificate was upheld in the case of men to
extent of 45 per cent. of those examined, and in the
of women to the extent of 35 per cent. The practi-
er's certificate was reversed in 21 per cent. of the cases
espect to men and 24 per cent. in respect of women. Of
cases which were referred but not examined 15 per cent.
e declared off the fund in respect of men and 19 per cent.
he case of women; and there were not examined for
ous other reasons 5 per cent. in the case of men and
r cent. in the case of women. He had found it necessary
ay quite plainly to the House that there were some
abers of the medical profession who they were convinced
not observing as carefully as they should the duties
h were laid upon them. One must recognise the great
culties under which no doubt many of these cases were
t with, but the fact remained, and it was one which he
red to emphasise. He hoped that the medical profession
ld assist them and the societies concerned and that they
ld not be compelled to take other and more compulsory
hods. In regard to the question raised about the
tion to the medical panel, that was not proceeded with
use there was a doubt as to whether they would be
inued in view of a recommendation of the Royal
mission. If Mr. Westwood would send him any
iculars he had about medical practitioners he would at
have the matter investigated.

ne motion to reduce the vote was rejected by 229 votes
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HOUSE OF COMMONS.

MONDAY, FEB. 20TH.

Export of Opium from India.

r. CAMPBELL asked the Under Secretary of State for
a what amount of opium was exported from India in
years 1926 and 1927; what was the total amount of
um produced in India in those years and the revenue
ved therefrom; and to what countries the exported
m was consigned.—Earl WINTERTON replied: In 1926
rts were 1,224,140 lb., including 88,000 lb. of medical
m sent to this country; the other destinations being
ch Indo-China, Malaya, Netherlands, East Indies, Siam,
g Kong, Sarawak, State of North Borneo, Ceylon, and
ibar. In the same year the produce of the acreage in
ish India was 1,082,700 lb. The net opium revenue of
Government of India for 1925–26 was Rs. 2,03,52,437.
r figures are not available.

Beds in Military Hospitals.

olonel WOODCOCK asked the Secretary of State for
how many beds there were available in the military
itals in this country; what was the maximum number
pied on any one date of last year; and what was the
ual average number of beds occupied.—Sir L.
THINGTON-EVANS replied: The answer to the first
of the question is 3454, to the second, 3277, and to the
1, 2061.

olonel WOODCOCK asked what was the estimated daily
of each occupied hospital bed and how the cost was approximately made up.—Sir L. WORTHINGTON-EVANS replied: The estimated average cost of an occupied bed a day in the seven large hospitals for which cost accounts are now kept is (*a*) 14*s.* 6*d.* if the cost of unoccupied beds is charged to the occupied beds, and (*b*) 10*s.* 6*d.* if this cost is excluded. The cost is made up approximately as follows:—

	(*a*)	(*b*)
	s. *d.*	*s.* *d.*
Patients: maintenance	3 6	3 6
Staff	7 4	4 8
Standing charges	3 8	2 4
	14 6	10 6

Factory Inspectors in Scotland.

Mr. BUCHANAN asked the Home Secretary the number of factory inspectors appointed in Scotland; if this was the full number allocated for Scotland; if not, when he intended to increase the numbers; and the numbers of inspectors in the same area in 1914.—Sir W. JOYNSON-HICKS replied: The staff now allocated to Scotland comprises 19 inspectors and two inspector's assistants. It is at full strength except for a recent vacancy, caused by the death of an inspector, which will be filled shortly. The staff in 1914 consisted of 16 inspectors and five assistants. The total number, therefore, was the same in both years.

TUESDAY, FEB. 21ST.

Holloway Prison Hospital Staff.

Mr. HAYES asked the Home Secretary the number of staff, superior and subordinate, employed in connexion with the Holloway prison hospital and the daily average of patients in the hospital for October, November, and December last.—Sir W. JOYNSON-HICKS replied: The medical staff at Holloway consists of the governor, who is also the medical officer, and two junior medical officers: the nursing staff consists of one hospital lady superintendent and 26 nurses. The daily average population of the hospital was 111 in October, 96 in November, and 113 in December last.

Opium Cultivation in British India.

Mr. WALTER BAKER asked the Under Secretary of State for India whether official estimates were regularly prepared for the government of India of the total area under opium poppy in British-Indian territory; whether these estimates and later corrected estimates were issued by the Government for public information; whether he would inform the House of the estimated and the actual area devoted to opium poppy cultivation in the year 1926–27; and if any estimate had been published of the probable area so cultivated during the year 1927–28.—Earl WINTERTON replied: The answer to the first part of the question is in the affirmative. The area engaged and that actually cultivated are stated in the report of the Opium Department published after the end of the year. The last report received here is for the year ended October, 1926. The following are the figures in acres for that and the preceding year:—

	Land engaged for.	Land actually measured and cultivated.
1924–25	111,953	114,198
1925–26	72,180	71,057

Army Hospital Accommodation in Portsmouth.

Sir FREDERICK HALL asked the Secretary of State for War what hospital accommodation was provided for Army purposes in the Portsmouth district; what was the number of patients that could be dealt with and what was the average number in residence; and what was the annual cost of upkeep.—Sir L. WORTHINGTON-EVANS replied: There is now no military hospital at Portsmouth. Military personnel are treated either in the Royal Naval Hospital, Haslar, or in the Royal Victoria Hospital, Netley.

WEDNESDAY, FEB. 22ND.

Beds in Service Hospitals.

Colonel WOODCOCK asked the First Lord of the Admiralty how many beds there were available in the naval hospitals in this country and what was the maximum number occupied on any one day of last year.—Lieut.-Colonel HEADLAM, Parliamentary Secretary to the Admiralty, replied: The reply to the first part of the question is 1912 and to the second, 1804.

Colonel WOODCOCK asked the Secretary of State for Air a similar question.—Sir S. HOARE replied: The answer to The first part of the question is 440; to the second, 368 the annual average number of beds occupied was 266.

Poor-law Relief.

Lieut.-Commander KENWORTHY asked the Minister of Health if he had any estimate of the number of persons in receipt of poor-law relief at the present time.—Sir KINGSLEY

WOOD, Parliamentary Secretary to the Ministry of Health, replied: As regards the first part of the question the number of persons in receipt of poor-law relief in England and Wales (excluding lunatics in county and borough asylums, casual, and persons in receipt of domiciliary medical relief only) on Saturday, Feb. 4th, 1928, was 1,208,179.

Tuberculosis in the Navy and Army.

Mr. HORE-BELISHA asked the First Lord of the Admiralty the number of men discharged from the Navy in 1927 suffering from tuberculosis and in how many cases was the disability attributable to service and disablement pension awarded.—Lieut.-Colonel HEADLAM replied: The numbers are 180 and 18 respectively. Pensions were granted on the attributable scale in the 18 cases and on the non-attributable scale in the other cases where the men had sufficient service to qualify.

Mr. HORE-BELISHA asked the Secretary of State for War a similar question.—Sir L. WORTHINGTON-EVANS replied: The number of soldiers discharged from the Army during 1927 on account of pulmonary tuberculosis was 201. 53 cases were regarded as attributable to military service and pensions awarded, and in 88 other cases non-attributable gratuities were granted.

Men Invalided from the Army.

Mr. HORE-BELISHA asked the Secretary of State for War how many men invalided from the Army in 1927 and denied pensions on the ground of non-attributability appealed to the War Office against the original decision; and in how many cases was the decision modified.—Sir L. WORTHINGTON-EVANS replied: The approximate number of men invalided from the Army during 1927 whose disability was considered as non-attributable who appealed or whose cases were referred to the War Office by the Chelsea Commissioners for further consideration was 200. In 77 of these cases the decision was modified. It is not possible to distinguish between appeals made by the men themselves and cases referred to the War Office by the Chelsea Commissioners.

Nystagmus Patients and Unemployment Benefit.

Mr. THOMAS WILLIAMS asked the Minister of Labour whether coal miners suffering from nystagmus were granted unemployment benefit.—Sir ARTHUR STEEL-MAITLAND replied: Coal miners suffering from nystagmus and not in receipt of full compensation under the Workmen's Compensation Acts are in general eligible for unemployment benefit subject to the usual statutory conditions. While I have no statistics on the point I have no reason to suppose that the proportion of disallowances of claims made by such miners is higher than the average. The receipt of partial compensation under the Workmen's Compensation Acts is not a disqualification for benefit, but those in receipt of full compensation would presumably be incapable of work and therefore ineligible for benefit.

Cost of National Health.

Mr. DENNISON asked the Minister of Health the amount expended per annum under the National Health Insurance Acts on sickness and disablement, medical, dental, ophthalmic, hospital, and convalescent homes; and the number of insured persons to whom such benefits were available.—Mr. N. CHAMBERLAIN replied: The amount expended per annum under the National Health Insurance and the number of insured persons vary from year to year. In the year 1926 for Great Britain the amount expended on sickness and disablement benefit and on medical benefit respectively and the mean number of persons to whom those benefits were available were approximately as follow:—

	Amount.	Mean number of persons.
Sickness and disablement	£18,721,000	15,100,000
Medical	9,536,000	15,886,000

The precise amount expended on each of the additional benefits specified in the question cannot be given separately, but the total amount expended on all additional non-cash benefits in the year 1926 was £1,864,000. Inasmuch, however, as the present schemes of additional benefits only commenced in July, 1926, for the great majority of insured persons, the expenditure in 1927 on such benefits was considerably higher and is estimated to have been about twice that for 1926. The annual amounts available, as at July 1st, 1927, in England only for certain benefits, and the numbers of members of societies giving such benefits, were approximately as follow:—

	Annual amount.	Numbers of members of societies giving benefit.
Dental	£2,589,000	12,338,000
Ophthalmic	413,000	11,563,000
Hospitals	292,000	8,656,000
Convalescent homes ..	208,000	9,817,000

THURSDAY, FEB. 23RD.

Ex-Service Men and Medical Treatment.

Mr. COMPTON asked the Minister of Pensions what wa cost per head per week of ex-Service patients under me treatment in institutions belonging to the Ministry a voluntary hospitals during 1925, 1926, and 1927.—M TRYON replied: The table shows the cost per week ex-Service patient in institutions belonging to the Min as compared with the corresponding cost of ex-Se patients in other hospitals for the years 1925, 1926, 1927:—

Year.	Ministry Institutions.	Other hospitals.
	£ s. d.	£ s. d.
1925	3 0 7	2 19 8
1926	3 0 6	2 18 11
1927	3 0 3	2 18 7

Comparison of the cost per head as between the classes of institution is necessarily affected by the fact in institutions controlled by the Ministry the entire m staff is salaried. Moreover, it is to be remembered tha Ministry only maintain separate institutions for treat where that course is necessary to supplement existing accommodation or to provide treatment for special clas disability for which hospital treatment is not othe available.

Mr. HAYES asked the Minister of Pensions the numb established and unestablished whole-time medical o employed by the Ministry during 1923, 1924, 1925, and 1927, and the average number of ex-Service cases treatment during the same period.—Major TRYON re The numbers of established and unestablished whole medical officers (including the whole-time medical sta Ministry institutions) employed by the Ministry durin years in question were as follows:—

Year.	1923.	1924.	1925.	1926.	1
Established ..	3	3	50	50	
Unestablished ..	544	452	329	222	

The average numbers of ex-Service men receiving ment during these years were 71,000, 56,500, 4 34,700, and 27,700 respectively.

Mr. CONNOLLY asked the Minister of Pensions i proposed new hospital was to be in Dunston, Gates and whether it was proposed to administer the hospi association with the Dunston after-care home for dis ex-Service men maintained out of the County of N umberland War Relief Fund.—Major TRYON replied: answer to the first part of the question is in the affirm The premises which are known as Dunston Hill H Dunston-on-Tyne, were formerly occupied by the N umberland Naval and Military War Pensions Volu Fund. The administration of the hospital will be i hands of my Ministry, but I have every reason to hop some, if not all, of the members of the Committee Northumberland Voluntary Fund will serve as memb the Welfare Committee of the new hospital when it is for occupation.

Mr. STEPHEN asked the Minister of Pensions the nu of ex-Service men, suffering from disability of any kin whose care the Ministry was responsible who are treated in institutions belonging to local authorit Scotland and England respectively.—Major TRYON re The number of ex-Service men who are in receipt of trea at the cost of the Ministry in institutions belonging to authorities was, at the end of January, approximately in England and 800 in Scotland.

Small-pox in Aspull and Hindley Areas.

Mr. RHYS DAVIES asked the Minister of Healt number of small-pox cases in the Aspull and H Urban Council areas during the period from Jan. 1st, onwards to date; what were the causes of the outb and what steps were being taken to prevent the d spreading.—Mr. CHAMBERLAIN replied: During the p year five cases of small-pox have occurred in the H Urban District and four in the Aspull Urban District. source of infection of the first case in each district ha been definitely ascertained. The usual steps are being in accordance with a memorandum issued by my depar to prevent the spread of infection, and I am informed b medical officer of Hindley that patients were remov hospital; house and clothing disinfected and co vaccinated or re-vaccinated. Handbills were prepare distributed to every house in the district and large n warning the public of the outbreak and advising vacci were posted in conspicuous positions throughou district. The infant welfare clinic was opened as a vacci centre where the vaccination officer was in attendance

schools were visited and special arrangements made for cination or revaccination. Over 1000 men, women, and dren were treated in this short period. All efforts were red on prevention. Absentees from works and schools e reported to the health department daily and visited. kinema proprietors coöperated and the halls were closed matinée performances. The schools, billiard halls, mployment exchange, and the post office were also nfected and preventive measures taken wherever sidered necessary.

Small-pox and Vaccination.

Mr. GROVES asked the Minister of Health how many of 7956 cases of small-pox classified in the report of the f medical officer of the Ministry of Health for the year 6 as unvaccinated had been vaccinated during the ubation period of small-pox, and the ages of such ients.—Mr. CHAMBERLAIN replied: Of the 7956 cases sified as unvaccinated in the report referred to 459 were sons unvaccinated at the time of infection, but vaccinated ing the incubation period. The following is in reply to last part of the question: The ages of the patients were:—

ler 1 year	15	20 and under 50 years..	64
nd under 6 years ..	80	50 and over	8
,, 11 ,, ..	111		
,, 20 ,, ..	181	Total	459

Poor-law Medical Treatment.

Mr. WHITELEY asked the Minister of Health what was the per head per week of adult persons under medical tment in institutions belonging to boards of guardians in land and Wales during the years 1925, 1926, and 1927 ectively.—Mr. CHAMBERLAIN replied: The average kly cost per inmate in poor-law institutions in England Wales for persons suffering from disease of body or d, for which separate accounts are kept (other than itutions belonging to the managers of the Metropolitan lums District) was 43*s.* in the year ended March 31st, 5, and 42*s.* 6¾*d.* in the year ended March 31st, 1926. corresponding figure for the year ended March 31st, 7, is not yet available, nor are figures distinguishing the of adult persons from that of children.

Hospital Beds for Tall Patients.

Mr. DAY asked the Minister of Health whether his attention been called to the remarks made by the deputy coroner an inquest held on Ernest Seldon Smith at Chelsea in ch it was proved that on account of the deceased's height, ch was 6 ft. 7 in., there was not a bed long enough for in the hospital; and would he give the necessary ructions that at all hospitals under his control there ll be one extra long bed for such tall patients.—Mr. MBERLAIN replied: I understand that the committee he hospital have been asked to consider the question of viding for this kind of emergency. I do not think, wever, that the matter is one in which I could properly e any general instruction.

Tuberculosis in the Air Force.

Mr. HORE-BELISHA asked the Secretary of State for Air number of men discharged from the Royal Air Force in 7 suffering from tuberculosis; and in how many cases the disability attributable to service and disablement sion awarded.—Sir S. HOARE replied: The numbers ed for are 23 and 4 respectively; in addition to the er two cases are still under consideration.

MONDAY, FEB. 27TH.

Inspection of Offices.

Lieut.-Colonel FREMANTLE asked the Minister of Health ny advice was given by his department to local authorities o their powers in the inspection of offices; and whether attention had been called to any difficulties placed in way of local authorities in making inspection.—Mr. MBERLAIN replied: I advise local authorities, on inquiry, t they have powers to undertake systematic inspection of es as well as inspection on complaint. I have not had instance brought to my notice where a local authority been impeded in such inspection. I may add that few ific complaints have been brought to my notice of office ditions.

Small-pox in England and Wales.

Mr. GROVES asked the Minister of Health the number of s of small-pox in England and Wales for each quarter he past year.—Mr. CHAMBERLAIN replied: The following ement gives the notifications of small-pox in England Wales, 1927 (provisional figures):—

13 weeks ended April 2nd		6,153
,, July 2nd		3,753
,, Oct. 1st		1,930
,, Dec. 31st		2,928
		14,764

Treatment of Leprosy in the Empire.

Mr. DAY asked the Secretary of State for the Colonies if any new stations were being built within the Empire for the treatment of leprosy by the hydnocarpus oil remedy and whether he could make a full statement on this subject.—Mr. AMERY replied: In those parts of the Empire where leprosy exists active measures are being taken by medical departments for its control, in many cases in coöperation with the British Empire Leprosy Relief Association and other agencies. Medical officers trained in recent methods have been detailed for special duty in Nigeria, the Gold Coast, Fiji, and other colonies, while in all areas attention is being given to the possibility of the eradication of the disease, by the establishment of treatment stations, as in Tanganyika, Nyasaland, Uganda, or by such other means as the situation appears to demand.

Alcohol and Drug Revenue in India.

Mr. WELLOCK asked the Under Secretary of State for India what was the amount of revenue derived from the sale of alcohol and narcotic drugs in the provincial legislatures of India and what percentage of the total provincial taxation this constituted in each of the last five years.—Earl WINTERTON replied: the following is the information asked for:—

(1) —	(2) Revenue from excise.	(3) Total revenue from provincial taxation, including land revenue.	(4) Percentage of Column (2) to Column (3).
	Rs. Lakhs.	Rs. Lakhs.	
1921–22 ..	1650.3	6177.0	26·72
1922–23 ..	1790.9	6588.0	27·18
1923–24 ..	1872.5	6715.7	27·88
1924–25 ..	1885.5	6880.9	27·40
1925–26 ..	1930.8	6964.0	27·73

TUESDAY, FEB. 28TH.

Coördination of Service Hospitals.

Dr. VERNON DAVIES asked the Secretary of State for War what progress, if any, had been made during the last three years with regard to the coördination of military hospitals at home and abroad with Naval and Air Force Hospitals respectively.—Sir L. WORTHINGTON-EVANS replied: In 1922 the Military Hospital, Chatham, and the Royal Naval Hospital, Gibraltar, were closed. Military patients at Chatham are now treated in the Royal Naval Hospital, Chatham, and naval sick at Gibraltar are treated in the Military Hospital, Gibraltar. Since 1922 the Alexandra Military Hospital at Cosham and the Military Hospital at Devonport have been closed, and military patients in these districts are now treated at naval hospitals. The Joint Medical Services Committee has the question of coöperation between the three medical services continually under review and useful work is being done.

B.B.C. and Medical Practitioners.

Mr. MACQUISTEN asked the Postmaster-General whether the British Broadcasting Corporation was authorised to exercise discrimination between representatives of the medical profession and other practitioners who did not belong to that profession.—Sir W. MITCHELL-THOMSON replied: The British Broadcasting Corporation is entirely responsible for the selection of the persons engaged to broadcast talks or lectures, and I do not propose to interfere with the Corporation's discretion in this matter.

Mr. MACQUISTEN asked if the Postmaster-General was aware that the B.B.C. asked a distinguished osteopath to give a talk. He sent the talk for revision, but they sent it back to have cut out of it all reference to osteopathy. Later, they wrote that, because he was not a doctor—which they had known all along—they would not allow him to give the talk. Would the right hon. gentleman take some authority to prevent such incidents happening again?—Sir W. MITCHELL-THOMSON: I am not officially aware of any of these matters, and I do not propose to interfere with the discretion of the Corporation.

Mr. MACQUISTEN: But I wish you to interfere with their indiscretion.

Small-pox.

Dr. VERNON DAVIES asked the Minister of Health if he would give the small-pox statistics for 1927 in England and Wales, and the number of cases of small-pox for the latest date available.—Sir KINGSLEY WOOD replied: 14,764 cases of small-pox were notified in England and Wales during 1927, and there were 49 deaths in respect of which small-pox was entered on the medical certificate as the cause, or one of the causes, of death. 2582 cases have been notified during the first seven weeks of the present year, but no particulars as to deaths are yet available.

Obituary.

SIR DAWSON WILLIAMS, M.D., F.R.C.P. LOND.,

LATE EDITOR OF THE "BRITISH MEDICAL JOURNAL."

WE deeply regret to announce the death of Sir Dawson Williams which took place at his country house, near Bourne End, on Monday last, Feb. 27th, in the seventy-fourth year of his age. He had for some time been in a precarious state of health, but when at the beginning of the year, he resigned the editorship of the *British Medical Journal*, which he had held for 30 years, it was hoped that freedom from arduous daily work would bring a recovery of strength and enable him to enjoy some years of leisure. His death, however, was sudden and occurred from cardiac failure only a few days after his definite removal from London.

Dawson Williams was born in July, 1854, at Ulleskelf, near York, being the eldest son of the Rev. J. Mack Williams, the rector of Burnby, by his wife Ellen, the daughter of Nicholas Monsarrat. He received his early education at Pocklington School, matriculated at University College, London, went later to the medical school of University College Hospital, and graduated M.B., B.S. Lond. with the gold medal for medicine in 1879. He had already taken the M.A. degree, and two years later he proceeded to the M.D. degree, qualifying for the gold medal in medicine. He took the M.R.C.P. Lond. in 1885 and was elected F.R.C.P. in 1895. At University College Hospital he served as house physician, obstetric assistant, and ophthalmological assistant under such distinguished leaders as William Jenner, Russell Reynolds, Charlton Bastian, Sydney Ringer, Grailly Hewitt, and William Gowers, and Victor Horsley was his immediate contemporary.

Williams's early inclinations towards consulting practice, where he would certainly have won a distinguished place, were marked by a close interest in clinical pathology and especially in the diseases of childhood. After serving as house physician to the Brompton Hospital for Consumption he became registrar and pathologist at the Victoria Hospital for Children, and in 1885 was elected assistant physician to the East London Hospital for Children. During this period he made many contributions to the Transactions of the old Pathological Society, notably one on myosarcoma of the kidney, one on certain aspects of the ætiology of tuberculosis, and one on congenital hydronephrosis, while in 1898 he published his excellent manual "The Medical Diseases of Infancy and Childhood." This volume embodied his experiences at the Shadwell Hospital, and while indicating his own views very distinctly gave adequate space to the teaching of others on points of pathology and treatment, explaining where he was not fully in accord with them. The section dealing with the acute specific fevers and the chapter on diphtheria were recognised at once as excellently concise accounts, and Williams continued successfully his literary work in this direction by contributing to Allbutt and Rolleston's "System of Medicine" the articles upon measles, German measles, infectious coryza, and glandular fever. All these contributions presented the same features of accuracy and the same desire to present fairly opposing views, while their practical nature was indicated by the space devoted to the details of the treatment. There is no doubt that the man who could thus use his opportunities and summarise his own experiences and those of others would have been a successful and probably a great clinician.

But he elected for journalism. As far back as 1881 he became associated with the editorial staff of the *British Medical Journal*, then edited by Mr. Ernest Hart. This connexion, at first desultory, became more and more intimate, until he became assistant editor in everything but name, his colleague being Louis Taylor, a capable journalist and a learned man who never finished his medical curriculum, but who, by a coincidence, started his course by dissecting a li in company with his fellow-student, Willia In 1895 Williams became assistant editor, on the death of Mr. Ernest Hart in 1898 was elected editor. Of that brilliant and singu personality, Ernest Hart, Williams always sp warmly, describing him as one of the most shee clever men he had ever met, and an admira tutor to a junior in journalism; while Hart s learned to depend largely on an assistant owning many qualifications which he did not himself poss During the latter part of Williams's tenure of junior position he was in practical charge of journal, for Hart was a seriously sick man, and du this period the relations between the *British Med Journal* and *The Lancet*, which had been rende difficult by the personal differences between Er Hart and the Wakleys, became cordial—a spirit professional coöperation being introduced wh affected no honourable competition.

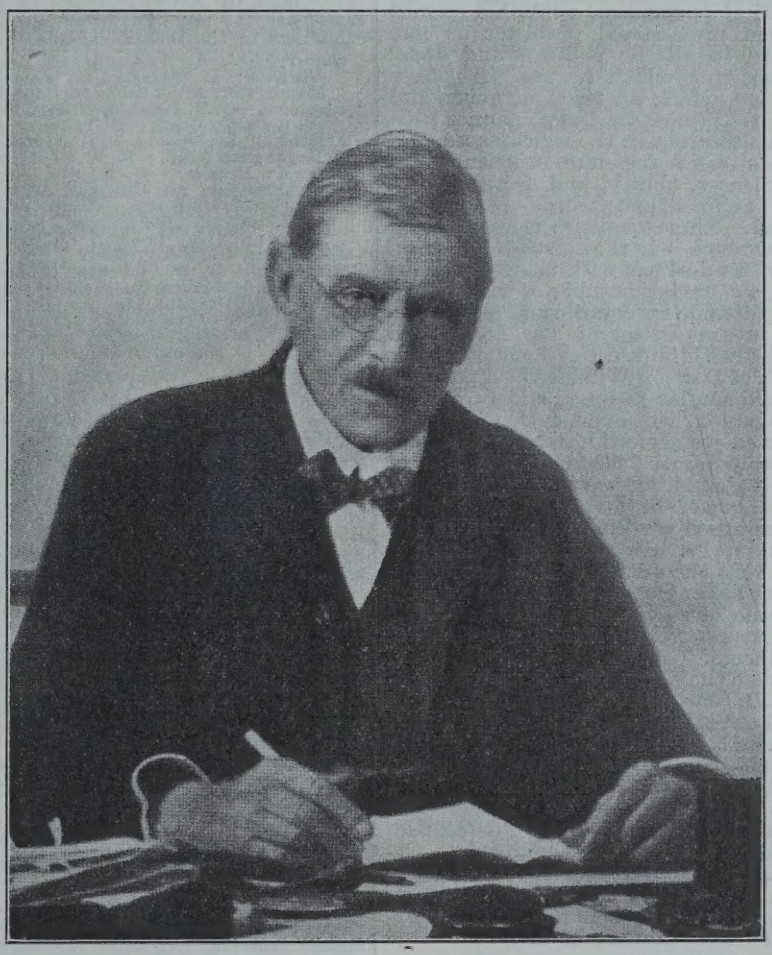
From this time forward Williams's life is reflecte the pages of the journal which he conducted with s conspicuous success and often in circumstances great difficulty. He saw alike the effects of remarkable advances in medical science wh followed hard upon Lister's work and were manifes in every direction of pathological research. He the no less complete changes which occurred in whole conduct of practice through the working of National Insurance Act. And in the meantime constitution of the British Medical Association entirely altered as the result of progressively de cratic modifications; and the membership increa remarkably when the elaborate pattern for transaction of its affairs got into working order. for a prolonged period the task of the editor, ca upon to adjust new principles with old, to advis to future procedure in untried circumstances, an register what was happening from day to day, w contrary views were often held with equal honesty opposing parties in the constituency, was one called for just those qualities of unusual strengt mind and unfaltering fairness of outlook wh Williams possessed.

Dr. C. O. Hawthorne, chairman of the Represe tive Body of the British Medical Association, se the following estimate of Dawson Williams, editor of the *Journal* of the Association and leader or coöperator in its plans for advancem Dr. Hawthorne writes: "Those of us who fo number of years have had close personal and off relations with Sir Dawson Williams have difficult this moment in expressing any thought other than sense of loss which has so suddenly fallen on us. a few weeks ago we said regretfully a formal fare to an editor and a colleague, but we said it with full hope that for him time had many restful hour store and for ourselves opportunities for renewal friendship and of counsel. And now, as it were moment, all these pleasing anticipations close darkness and in some senses in dismay. For behind apparent severity and aloofness Dawson Williams for those who served with him a large capacity comradeship, and qualities which stirred and affection. Not readily known, perhaps, but well w knowing, and genuine and real and sincere. might differ from him in opinion, but no one questio his integrity, and these personal qualities gave him secure position which he held in the esteem and re of his colleagues. With his resignation of the edito chair there was a not unnatural conclusion that work was done, but many of us who have been c to his stores of knowledge and experience and good were counting with confidence on not a few hel associations in the future. The editorship, ind had ceased, but not we knew well the friendship the readiness for service. Now fate has put its on both chapters and left us but memories and regr

"In this brief note of appreciation I must re general impressions rather than particular incide These come from associations, enterprises, responsibilities shared in a common but not an e

rtnership. For with all his knowledge and experi-ce Williams was always ready and indeed anxious, ior to decision and action, to hear the other view. e was, too, a good listener and patient of the other ew, at least to a point, and he would take it from yone so long as arguments could be quoted in its pport. But beyond this moment the caller, parently from some mysterious change in the mosphere, became aware that the editorial time was luable and that the last word had been said. In s own depart-ent he refused be hurried in dgment, but e was not raid of deci-on, and he eached and actised the octrine of itorial respon-ibility in no un-rtain fashion. ot unnaturally took a high ew of the func-on of the *itish Medical urnal* in the heme of the sociation and, deed, in the rk of the pro-ssion gener-ly, and against ything which nded to lessen is claim he as prepared to fer a strenuous sistance. Here, would urge, post-gradua-on training ought to the actitioner's or. Nor were s sympathies any means stricted to the itorial chair. n the contrary, e was alert to l the interests d enterprises the Associa-on and was en to hold ese to the high-st standards. n council he was helpful with information and certain spaciousness of judgment, and though utious he would press the bold view where s convictions were strong. Perhaps he accepted ther grimly an adverse decision, but he had high sense of loyalty to the Association and happily e cultivated a generous measure of humour which nt rather to the ironic side. To be associated with m in the work of a great organisation was to learn ith what abundance of knowledge and experience s mind was equipped, to grow an increasing regard r his high sense of personal and professional recti-de, and gradually to recognise that a great editor as none the less a man and a brother."

Mr. Bishop Harman, treasurer of the British Medical ssociation, draws a moving picture of his dead lleague and friend. He writes: "Dawson Williams as a great gentle man. The last two words are ritten apart, for they then seem the better to describe im than the more common joined word. He was a reat gentle man. A man, great in stature both hysical and mental. A man withal gentle of spirit. His gentleness was manifest behind all the natural mastery which his endowments enabled him to wield. That is my impression of him. It is the impression of a knowledge of some 30 years, reinforced in the last six years by as close a contact as work and social intercourse can give. For those last few years some common ground of work and responsibility in the affairs of the British Medical Association enabled me to learn of him more than all the earlier years of previous acquaintanceship. In the earlier days one knew him as the Editor of the *British Medical Journal*. One whose knowledge seemed almost omniscient in medicine. Withdrawn from the turmoil of research, of discussion, and of practice he seemed aloof, and yet one found him in touch with everyone. No matter how retired some earnest student might seem to others, Williams knew of him and his doings. In those days his word seemed all powerful. There was no recall from his decisions. But latterly we met as it were on a common level, a few around a table. Then his projects might be questioned, his decisions had to be defended. Then one saw how he worked. How carefully he gathered his facts, how he balanced seemingly conflicting observations, and by sheer logic disclosed the inevitable conclusion and the grounds for the action he advocated. For a man possessed of his singular mastery of affairs he was remarkably free from arbitrariness. This thing ought to be done, not because he said it ought to be done, but because he could show the reasonableness of the doing of it. If I were asked to say what I thought was the mainspring of Dawson Williams's work, I should reply without hesitation, love of his profession and—Duty. He loved his profession because it brought relief to sufferers, and he knew as few do what that means. But Duty filled his horizon, and there were no bounds to that; and to him it seemed there could be no praise higher than that duty had been done. When there was under consideration what motto would be appropriate for the 'Gates of Honour' that span the forecourt of the new House of the British Medical Association, and which were erected to the memory of those of our colleagues who had fallen in the Great War, Williams's first choice was 'Duty and Praise.' Though the choice fell upon other words, yet the force of his plea for his preference remains in my mind.



SIR DAWSON WILLIAMS.

Reproduced from a photograph taken in the editorial room of the "British Medical Journal" at the time of his retirement. (By the courtesy of the Editor of the "British Medical Journal.")

It seemed an epitome of his own work. Done often under severe physical handicap and in a life of much sorrow. Yet for him there was duty to be done. He did it. We can speak in his praise."

The words of Dr. Hawthorne and Mr. Bishop Harman need no endorsement; they reveal the man as he was known to those who really knew him. But it is fitting that *The Lancet* should record admiration and affection for the man, as well as our full appreciation of his qualities as an editor. Williams's academic equipment was from the beginning a source of strength in medical journalism, while his trained mind easily grasped professional problems *as they arose*. With regard to all the political and social development of medicine which he saw he had a clearness of judgment which no years of experience ever tempted him to express in facile manner; he was brave or he was cautious in the right places, and his high standards were for him unchangeable. Austerity and gentleness, ability, and fairness were expressed in his actions and words exactly as each was demanded. These qualities were reflected throughout his conduct of the *British Medical Journal* and also in his dealings with members of the medical profession, a countless number of whom must owe him a debt of gratitude for counsel and assistance. Among such is the present Editor of *The Lancet*, and he and all associated with him in the conduct of this paper feel the death of Dawson Williams as a personal loss. We trust that similar feelings, widely evoked in the medical profession, will express themselves in the movement started just before his death to create a tangible memorial to him. This movement will, of course, go on, and it should be known widely that Sir Dawson Williams himself in an interview shortly before his death expressed a wish with regard to the form that it should take. He desired nothing for himself, but hoped that the memorial would associate his name with some advancement of medicine. It is fitting that the name of so wise a champion of our calling should be remembered in connexion with some great and useful scheme.

Many honours were the natural lot of such a man. He was hon. LL.D. Glasg., D.Litt. Durham, D.Sc. Sheffield, and a Fellow of University College, London. He was created C.B.E. in 1919 and two years later received a knighthood. He married in 1882 Catherine, daughter of Robert Kirkpatrick-Howat, D.L. She died ten years ago, but a daughter survives who was her father's greatest care through many years of invalidism and to whom all hearts will go out in sympathy.

The funeral takes place to-day (Friday) at Little Marlow Cemetery, near Bourne End, at 3.30 P.M., while a memorial service will be held on Monday next, March 5th, at St. Pancras Church, at 1.45 P.M.

THE LATE DR. T. C. GUTHRIE.—Dr. Thomas Clement Guthrie, who died on Feb. 18th in his sixty-first year, had been in practice in Tunbridge Wells for 30 years, and was for a long time surgeon to the general hospital there. A grandson of the eminent divine, Thomas Guthrie, he was born at Liberton in Midlothian, and graduated at the University of Edinburgh in 1892. After house appointments at the Royal Infirmary, the Royal Hospital for Sick Children and elsewhere he entered practice at Tunbridge Wells at first in partnership and later by himself. He was a skilful surgeon whose work was much appreciated, and at the time of his death he had just retired from active practice. Dr. Guthrie leaves a widow with one son and one daughter.

THE LATE DR. J. W. KEIGHLEY.—Dr. John William Keighley, of Blackburn, who died on Feb. 15th, after a brief illness, was sixty-one years of age and was a native of Blackburn. He received his medical education at the University of Edinburgh and at the London Hospital, graduating as M.B. Edin. in 1894, and M.D. in 1918. A member of the Blackburn District Medical Society, he served as president for the session 1909–10, and he was also president of the Blackburn branch of the British Medical Association, and hon. secretary of the local medical and panel committee from its inception until three years ago. He took an active part in the public and political life of the town, and was a justice of the peace, an alderman of the borough, and a town councillor from 1907. He also served on the Lancashire Asylums Board for nine years. He leaves a widow, one daughter, and three sons.

Medical News.

UNIVERSITY OF OXFORD.—At a recent congregat the following degrees were conferred:—

D.M.—E. W. Neill Hobhouse, H. A. Gilkes, and D. S. Da
B.M.—R. Oddie.

Dr. A. Massey has been appointed honorary demonstr in public health.

SOCIETY OF APOTHECARIES OF LONDON.—At rec examinations the following candidates satisfied examiners in the undermentioned subjects:—

Surgery.—W. A. A. Collington, Guy's Hosp.; B. Ell Durham; M. Franzler, St. George's Hosp.; G. Fur Manchester, A. E. Gibbs, London Hosp.
Medicine.—G. N. Beeston, Charing Cross Hosp.; M. Fran St. George's Hosp.; H. I. Jones, St. Mary's Hosp.; J Mitchell, Liverpool; N. S. J. Roberts (Sec. 1), Bristol Royal Free Hosp.; R. W. Wood, St. Bartholomew's H
Forensic Medicine.—G. N. Fox, St. Bartholomew's Ho M. Franzler, St. George's Hosp.; K. J. M. Gral Charing Cross Hosp.; W. B. Hallums, St. Mary's Ho H. J. Harcourt, St. Thomas's Hosp.; H. T. Ince, St. M Hosp.; F. M. Lessing, Charing Cross Hosp.; H Rylance, Middlesex Hosp.
Midwifery.—K. D. C. Beckitt, Charing Cross Hosp.; H Bowen, Middlesex Hosp.; M. Franzler, St. George's Ho K. J. M. Graham, Charing Cross Hosp.

The Diploma of the Society has been granted to the follo candidates, entitling them to practise medicine, surgery, midwifery: G. N. Fox, M. Franzler, G. Furniss, and R. W. W

UNIVERSITY OF LONDON.—At a meeting of Senate held on Feb. 22nd the title of Fellow of Unive College, London, was conferred on Dr. Gleb Anrep, lect in physiology in the University of Cambridge, and Sur Vice-Admiral Arthur Gaskell, Medical Director-Gener the Navy. The title of Fellow of King's College, Lon was conferred on Mr. T. Franklin Sibly, D.Sc., prin officer of the University of London, and Prof. Wil Blair Bell, director of the Liverpool (Cancer) Rese Association. Sir Holburt Waring was appointed represent the University at the centenary celebration the Faculty of Medicine and International Congres Tropical Medicine and Hygiene to be held at Cair December next.

University of London: Parliamentary Repres tion.—At the annual general meeting of the Unive of London Conservative and Unionist Association, hel Feb. 23rd, it was decided to adopt Sir John Gilbert a prospective Conservative candidate at the next ge election. He has been an alderman on the London Co Council since 1910. He was chairman of the L.C.C. Ec tion Committee, 1913–17; chairman of the L.C.C. i 1920–21, and chairman of the L.C.C. General Pur Committee, 1921–27. He has been a member of the Se of the University since 1921, and served on the Boa Education Departmental Committee on the Trainin Teachers, 1923.

ROYAL INSTITUTION.—A meeting will be to-day, Friday, March 2nd, at 9 P.M., at 21, Albem street, London, W., when Sir Farquhar Buzzard, R professor of medicine in the University of Oxford, speak on the Psychology of the Sick.

A TOUR IN YUGOSLAVIA.—A medical tour has planned to take place at Easter through Yugoslavia huge and interesting territory which now represents whole of the Balkan area west of Roumania and Bulg with contributions from Austria and Hungary. The will include the ancient capital of Zagreb; Sarajevo little city where the storm burst which involved Euro war; Mostar, the capital of Herzegovina; Cetinje former site of Montenegro rule; the lake of Scutari, Ragusa, perhaps the best known for its beauty of al Dalmatian cities. The journey will also include Spa now known as Split, a town largely contained by a palace of Diocletian; Sebenico, which has a fift century cathedral with unique architectural features; Zara, whose notable churches and Roman remains al attract the visitor of the Adriatic coast. The tour mences on Tuesday, April 3rd, when a departure wi made from Liverpool-street Station for Harwich, at 8.3 Early arrival at the Hook of Holland will allow the trav to dine at Munich on April 4th and in Zagreb on April The next three weeks will be spent in somewhat leis travel, by train and car, and occasionally by boat, thr the centres which have already been mentioned, and schedule suggests arrival back at Harwich early on morning of April 24th, Liverpool-street Station reached by midday. Full information as to expe kit, and details of the tour can be obtained from Mr. Fr Baerlein at the Bath Club, 34, Dover-street, London, W.

ARVEIAN SOCIETY OF LONDON.—A meeting of Society will be held on Thursday, March 15th, at P.M., at the Paddington Town Hall, when the Harveian ure will be delivered by Sir William Willcox, his subject g Toxicology and its Application to Medical Practice.

OURSE IN PSYCHOLOGICAL MEDICINE.— A course ctures and practical instruction for candidates for the oma in psychological medicine will begin at the Maudsley pital, Denmark Hill, London, S.E., from March 6th. iries should be addressed to the director of the Central ological Laboratory at the hospital.

EST KENT MEDICO-CHIRURGICAL SOCIETY.—A ting of this society will be held at the Miller General pital, Greenwich, on Friday, March 9th, at 8.45 P.M., n Dr. Maud M. Chadburn will give an address on the ium Treatment of Cancer of the Cervix Uteri.

ANCHESTER ROYAL INFIRMARY.—The trustees of late Colonel John Barlow, of Bury, have assigned 0 to the new Nurses' Home Fund of Manchester Royal mary.

NIVERSITY OF BIRMINGHAM.—A block of land prising over 40 acres has been presented to the University Mr. and Mrs. Anstruther-Gough-Calthorpe. It lies in immediate vicinity of the present buildings and brings total area owned by the University up to 100 acres.

NIVERSITY OF EDINBURGH.—Dr. W. T. Ritchie, or lecturer in clinical medicine, has been appointed to professorship in medicine in the University vacant by resignation of Prof. Lovell Gulland.

LINICAL STUDY OF RHEUMATISM.—The Central mittee on Rheumatism, International Society of Medical rology, have decided to organise clinical conferences on s of rheumatic disease in hospitals. In connexion with naugural meeting of the Society's French Committee on umatism in Paris on April 2nd a conference will take e at La Pitié Hospital and the Salpêtrière. Further mation may be had from the Secretary of the French mittee, Dr. H. Forestier, 10 rue du Mont Thabor, s (I).

NTERNATIONAL COURSE AT CARLSBAD.—An inter- nal medical post-graduate course, having special ence to balneology, will be held at Carlsbad from . 23rd to 29th. Representatives of the medical faculties Austria, Bulgaria, Czecho-Slovakia, Denmark, France, land, Germany, Italy, Norway, Poland, Sweden, zerland, and the United States of America will give esses, and further information may be had from Dr. ar Ganz, Haus "Pelikan," Alte Wiese, Carlsbad, ho-Slovakia.

ECTURES ON CANCER.—The Yorkshire Council of British Empire Cancer Campaign, in conjunction with Leeds and West Riding Medico-Chirurgical Society, has nged a series of three lectures, open to members of the ical profession without fee, to be given at the Medical ol, Leeds, on Wednesdays, as 3.30 P.M. On March 7th introductory address will be given by Sir Berkeley nihan; on April 4th Prof. G. E. Gask will speak on ium in the Treatment of Malignant Disease; and on 9th Prof. G. Grey Turner will speak on Cancer of the tum. Tea will be provided at 4.30 P.M., and practi- ers who intend to be present are asked to inform the etary of the campaign at 47, Park-square, Leeds, at t two days before each lecture.

IR CHARLES HASTINGS MEMORIAL LECTURE.—The nd of a series of popular health lectures commemorating Charles Hastings will be given under the auspices of the ish Medical Association on Wednesday, March 21st, Sir George Newman, Chief Medical Officer of the Ministry Health and the Board of Education. His subject will be Fundamentals of Health. Lord Cozens-Hardy will take chair at 8 P.M. and admission will be free by tickets inable from the financial secretary of the B.M.A. at Association's House in Tavistock-square, London, W.C. 1, re the lecture will be delivered.

OYAL SOCIETY OF EDINBURGH.—The following lidates, among others, have been recommended by the ncil for election as Fellows of this Society: Dr. A. J. k, professor of materia medica, and Mr. John Fraser, ius professor of clinical surgery, in the University of nburgh; Dr. Kenneth Fraser, deputy medical officer of th for Cumberland; Mr. P. J. Johnston-Saint, secretary he Wellcome Historical Medical Museum, London; R. W. Johnstone, professor of midwifery and diseases omen in the University of Edinburgh; Dr. T. J. Jones, rer in anatomy in the University of Liverpool; Dr. . Mackie, professor of bacteriology in the University dinburgh; Dr. G. H. Percival, assistant physician in skin department of the Edinburgh Royal Infirmary; Mr. Ronald Senior-White, malaria research officer, ral Malaria Research Bureau, Kasauli, India.

DR. SCHWEITZER'S ENGLISH VISIT.—It is stated that Dr. Albert Schweitzer, who has returned to Europe from his hospital at Lambarene in French Equatorial Africa, will arrive in England at the beginning of May for a six week's visit. It is doubtful whether he can arrange lectures in this country, but invitations to give organ recitals will be considered if sent to Mr. J. P. Fletcher at Friends House, Euston-road, London, N.W. 1.

SEAHAM HALL AS SANATORIUM.—On Saturday last Seaham Hall was opened as a sanatorium for the county of Durham. This beautifully situated and historic house has been presented to the County Council by the Marquis of Londonderry, by whose family it was purchased in 1824.

FINANCES OF KING'S COLLEGE HOSPITAL.—Correcting an impression that has got abroad that this hospital is financially prosperous, Prof. W. P. Halliday, Principal of King's College, when presiding over the annual court, stated that there is an outstanding debt of £72,000. There has been, however, on the past year's working a credit balance of £5700; the income just exceeded £100,000.

BETHLEM HOSPITAL.—At a meeting of the Governors held on Feb. 26th the Lord Mayor announced that Sir Charles Wakefield had given £25,000 towards the appeal for £120,000 still required to cover the estimated cost of the new hospital building. Other gifts included £5000 from Lady Cooper. A rural site has been secured for the hospital at the Monks Orchard Estate, Shirley, near Croydon, with a total area of 330 acres.

THE PRACTISING MIDWIFE.—A conference on the place of the practising midwife in relation to the protection of motherhood will be held on Wednesday, March 7th, at 5 P.M., under the auspices of the Midwives' Institute, at the house of the Royal Society of Arts, John-street, Adelphi, W.C. The conference is based upon the report by Dame Janet Campbell to the Ministry of Health, and will be presided over by Sir Francis Champneys. The discussion will be opened by Dr. J. S. Fairbairn.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

TUESDAY, March 6th.—8.30 P.M., ORTHOPÆDICS. Discussion on the Treatment of Acute Osteomyelitis. Opener: Mr. Harry Platt. Other Speakers: Mr. Alexander Mitchell, Mr. Eric Lloyd, Mr. Whitchurch Howell, and Mr. W. H. Ogilvie. 8 for 8.30 P.M., PATHOLOGY. Laboratory Meeting at the Lister Institute, Chelsea Gardens, S.W. 1. Papers and Demonstrations: G. H. Eagles and D. McClean: On the Growth of Vaccinia in Tissue Culture. R. W. Fairbrother: Cholera Antigens from the Prophylactic Point of View. J. H. Orr and W. A. Campbell: The Action of *Welchii* Toxin on Red Cells in vitro. M. Robertson: The Behaviour of a Protozoon Exposed to Acriflavine. J. C. G. Ledingham and D. McClean: Propagation of Vaccine Virus in Rabbit Dermis. H. Chick, M. H. Roscoe and M. A. Boas: Pellagra-like Conditions in Rats. (Demonstration.)

WEDNESDAY.—5 P.M., HISTORY OF MEDICINE. Papers: Dr. Robert Hutchison: A Biographical Note on Sir James Wylie, Bart., M.D., A Medical Adventurer. Mr. F. Prescott: Louis Pasteur and Fermentation. 8.30 P.M., SURGERY. Discussion on Colectomy. Opener: Dr. T. de Martel (Paris).

THURSDAY.—5 P.M., BALNEOLOGY. Discussion on the Value of Marine Health Resorts, with a Special Reference to Children. Opener: Dr. Fortescue Fox. Subsequent Speakers: Dr. Percy Lewis (Folkestone), Dr. W. C. Willoughby (Eastbourne), Dr. Collis Hallowes (Torquay), Dr. G. R. Bruce (Hastings), Dr. W. S. Campbell (Sidmouth), Dr. W. G. Sutcliffe (Margate), Dr. Octavia Wilberforce (Brighton). 8.30 P.M., NEUROLOGY. Discussion on Narcolepsy. Opener: Dr. S. A. Kinnier Wilson.

FRIDAY.—5.30 P.M., CLINICAL. (Cases at 5 P.M.) Cases will be shown. 5 P.M., OPHTHALMOLOGY. Clinical Meeting at St. Thomas's Hospital. (Tea at 4.30 P.M.) Cases: P. G. Doyne: 1. Asymmetry of Face. ?Plagiocephaly. 2. ?Parinaud's Conjunctivitis. 3. Atypical Ptosis. Arthur D. Griffith: 1. A Case of Scarring of the Nerve-head (probably birth injury). 2. Hypertrophic Scars in Retina. Fundus Paintings: 1. Scarring of the Nerve-head (see above). 2. Retinal Hole at the Macula. 3. Gumma of Sclera. 4. Gummatous Scleritis. G. W. Kendall: Loss of Upper Half of Visual Field in One Eye. ? Cause. A. S. MacCallan: Tumour of the Iris. H. Neame: ? Familial Macular Degeneration in a Girl. A. Hugh Thompson: 1. Aniridia with Dislocated Lens. 2. Macular "Colobomata." 3. Acquired Central Choroiditis simulating a Second Optic Disc.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, W.
WEDNESDAY, March 7th.—9 P.M., Dr. F. J. Poynton: Rheumatic Heart Disease in Childhood. (Lettsomian lectures (3).)
THURSDAY.—7.45 P.M., Anniversary Dinner at the Trocadero Restaurant.

LEEDS AND WEST RIDING MEDICO-CHIRURGICAL SOCIETY POST-GRADUATE COURSE ON CANCER.
WEDNESDAY, March 7th.—3.30 P.M. (in the Medical School, Leeds), Sir Berkeley Moynihan, P.R.C.S.: Introductory Address.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS, Pall Mall East, S.W.
TUESDAY, March 6th.—5 P.M., Dr. F. A. E. Crew: Individual, Familial, and Racial Inborn Differences in Respect of Immunities and Disease Resistance. (Milroy lecture (2).)
THURSDAY.—5 P.M., Milroy lecture (3).)

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.
MONDAY, March 5th, to SATURDAY, March 10th.—FELLOWSHIP OF MEDICINE LECTURE, Medical Society of London, 11, Chandos-street, Cavendish-square, W. Mon., 5 P.M., Dr. C. M. Wilson: The Chronic Abdomen.—BRITISH INSTITUTE OF RADIOLOGY, 32, Welbeck-street, W. Tues., 3 P.M., Dr. F. Hernaman-Johnson: X Rays as an Aid in the Diagnosis of Abdominal Disease (Demonstration of Radiographs).—HOSPITAL FOR DISEASES OF THE THROAT, Golden-square, W., Wed., 3 P.M., Clinical Demonstration by Mr. Jefferson Faulder. The above open free to members of the medical profession.—CHELSEA HOSPITAL FOR WOMEN, Arthur-street, S.W. Special Course in Gynæcology—some mornings and some afternoons.—QUEEN'S HOSPITAL FOR CHILDREN, Hackney-road, E. Intensive Course in Diseases of Children.—ROYAL EYE HOSPITAL, Southwark, S.E. Demonstrations and Treatment of Diseases of the Eye at 3 P.M., Mon. to Fri. inclusive.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith.
MONDAY, March 5th.—10 A.M., Dr. Dowling: Skin Department. 2 P.M., Dr. Trevor Davies: Gynæcological Department. 4.30 P.M., Special Lecture; Mr. Addison: Cancer of the Tongue.
TUESDAY.—10 A.M., Medical Registrar: Medical Wards. 2 P.M., Mr. Sinclair: Surgical Out-patients. 2 P.M., Mr. Hamblen Thomas: Throat, Nose and Ear Department.
WEDNESDAY.—10 A.M., Dr. Burnford: Medical Wards. 2 P.M., Mr. Tyrrell Gray: Operations. 2.30 P.M., Mr. Donald Armour: Surgical Wards.
THURSDAY.—10 A.M., Dr. Grainger Stewart: Neurological Department. 2 P.M., Mr. Simmonds: Surgical Out-patients. 3 P.M., Sir Henry Simson: Gynæcological Ward.
FRIDAY.—10 A.M., Dr. Pritchard: Medical Wards. 12 noon, Dr. Ironside: Clinical Demonstration. 4.30 P.M., Mr. Vlasto (Special Lecture): Diagnosis and Treatment of Middle Ear Infections.
SATURDAY.—9.30 A.M., Dr. Burnford: Bacterial Therapy Department. 10 A.M., Dr. Owen: Medical Diseases of Children.
Daily, 10 A.M., to 5 P.M., Saturdays, 10 A.M. to 1 P.M., In-patients, Out-patients, Operations, Special Departments. Anæsthetic and Operative Surgery Classes.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James's Hospital, Ouseley-road, Balham, S.W.
WEDNESDAY, March 7th.—4 P.M., Dr. C. G. Lakin: The Medical Dyspepsias.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham.
MONDAY, March 5th.—2.30 to 5 P.M., Medical, Surgical, and Gynæcological Clinics. Operations.
TUESDAY.—2.30 to 5 P.M., Medical, Surgical, Throat, Nose and Ear Clinics. Operations.
WEDNESDAY.—2.30 to 5 P.M., Medical, Skin, and Eye Clinics. Operations.
THURSDAY.—11.30 A.M., Dental Clinics. 2.30 to 5 P.M., Medical, Surgical, and Ear, Nose, and Throat Clinics. Operations.
FRIDAY.—10.30 A.M., Throat, Nose, and Ear Clinics. 2.30 to 5 P.M., Surgical, Medical, and Children's Diseases Clinics. Operations.
On Wednesday and Friday, at 2.30 P.M., there will also be demonstrations of Skin and Medical (Children) Cases by Dr. W. Jenkins Oliver and Dr. C. E. Sundell respectively.

NATIONAL HOSPITAL, Queen-square, Bloomsbury.
MONDAY, March 5th.—2 P.M., Dr. Hinds Howell: Out-patient Clinic. 3.30 P.M., Dr. Kinnier Wilson: The Epilepsies.
TUESDAY.—2 P.M., Dr. Walshe: Out-patient Clinic. 3.30 P.M., Dr. Bernard Hart: The Psychoneuroses (2).
THURSDAY.—2 P.M., Dr. Kinnier Wilson: Out-patient Clinic. 3.30 P.M., Mr. Just: Methods of Testing the Eighth Nerve (in Out-patient Department).
FRIDAY.—2 P.M., Dr. Adie: Out-patient Clinic. 3.30 P.M., Dr. Symonds: Some Forms of Encephalitis.

HOSPITAL FOR SICK CHILDREN, Great Ormond-st., W.C.
THURSDAY, March 8th.—4 P.M., Mr. H. Tyrrell Gray: Abdominal Pain.

ROYAL NORTHERN HOSPITAL, Holloway-road, N.
TUESDAY, March 6th.—3.15 P.M. (at the Royal Ch... Hospital), Dr. H. Barty King: Demonstration ... Cases in the Wards.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospi... 49, Leicester-square, W.C.
TUESDAY, March 6th.—5 P.M., Dr. J. E. M. Wigl... Leukæmia Cutis. Mycosis Fungoides.
THURSDAY.—5 P.M., Dr. J. E. M. Wigley: Pemphigus ... Allied Eruptions.

BELGRAVE HOSPITAL FOR CHILDREN, 1, Clapham-ro... S.W.
WEDNESDAY, March 7th.—4.30 P.M., Mr. R. A. Rams... Clinical meeting.

CENTRAL LONDON THROAT, NOSE AND EAR H... PITAL, Gray's Inn-road, W.C.
FRIDAY, March 9th.—4 P.M., Mr. Arthur Brown: Disea... of the Maxillary Antrum.

ST. PAUL'S HOSPITAL, Endell-street, W.C.
THURSDAY, March 8th.—4.30 P.M., Mr. H. P. Winsb... White: Stone in the Upper Urinary Tract and ... Treatment.

ROYAL INSTITUTE OF PUBLIC HEALTH, 37, Russ... square, W.C.
WEDNESDAY, March 7th.—4.30 P.M., Dr. G. Roche Lyn... Some Problems in Medico-Legal Practice.

PEOPLE'S LEAGUE OF HEALTH.
WEDNESDAY, March 7th.—6 P.M. (at the Medical Socie... Rooms, 11, Chandos-street, Cavendish-square, ... Dr. W. A. Potts: Crime and Delinquency.
THURSDAY.—6 P.M., Prof. Winifred Cullis: Food in R... tion to Growth.

ANCOATS HOSPITAL POST-GRADUATE LECTURES, ... street, Manchester.
THURSDAY, March 8th.—4.15 P.M., Dr. Lang... Exophthalmic Goitre.

MANCHESTER ROYAL INFIRMARY POST-GRADU... COURSE.
TUESDAY, March 6th.—4.15 P.M., Mr. J. Howson F... Mucous Colitis.
FRIDAY.—4.15 P.M., Dr. D. E. Core: Demonstratio... Medical Cases.

UNIVERSITY OF SHEFFIELD POST-GRADUATE CLIN...
FRIDAY, March 9th.—3.30 P.M., Mr. Finch: Surg... Cases.

Appointments.

GEMMELL, R. W., M.D., Ch.B. Liverp., D.P.H., has ... appointed Hon. Radiologist, Stanley Hospital, Liverpo...
OWEN, R. D., F.R.C.S. Edin., Honorary Assistant Surgeo... the Ear, Nose and Throat Department of the Cardiff R... Infirmary.
RICHARDSON, G. Y., M.D., Ch.B. Edin., D.P.H., Medical O... to the counties of Midlothian, West Lothian, and Pee...
WILLIAMS, R. L., M.B., B.Ch. Camb., F.R.C.S. Eng., Hono... Surgeon to the Passmore Edwards Hospital, Wood G... London.
St. Bartholomew's Hospital: WILSON, H., F.R.C.S. ... M.S. Lond., Surgeon; KEYNES, GEOFFREY, M.D. Ca... F.R.C.S. Eng., Assistant Surgeon.
Certifying Surgeons under the Factory and Workshop A... THOMAS, I., M.B., Ch.B. Liverp. (Pontrhydygroes, Cardi... HENDERSON, P. S., M.B., Ch.B. Edin. (Fyvie, Aberde... CARTER, C. S. (Kenninghall, Norfolk).

Vacancies.

For further information refer to the advertisement columns.

Albert Dock Hospital, Connaught-road, E.—Res. M.O. At ... of £110.
Birmingham and Midland Ear and Throat Hospital.—Se... H.S. At rate of £150.
Birmingham and Midland Homœopathic Hospital and Dispen...—Hon Anæsthetist and Hon. Consulting Ophth. S.
Birmingham, Monyhull Colony, King's Heath.—Res. Asst. £250–£350.
Brighton Borough Infectious Disease Hospital and Sanatoriu... Res. M.O. £350.
Brighton, Sussex Maternity and Women's Hospital.—Res. ... £130.
Carlisle, Cumberland Infirmary.—Two Res. M.O.'s. At ra... £155 and £135 respectively.
Chesterfield and North Derbyshire Royal Hospital.—Jun. ... and Cas. H.S. Each at rate of £100.
Douglas, Isle of Man, Noble's Hospital.—Res. H.S. £175.
Dreadnought Hospital, Greenwich.—H.P. At rate of £110.
Hertford County Hospital.—Hon. Anæsthetists.
Hertfordshire County Council.—Asst. M.O.H. £700.
Hospital for Sick Children, Great Ormond-street, W.C.—Jun... O. (part-time). At rate of £75.
Hospital for Tropical Diseases, Endsleigh-gardens, W.C.—... At rate of £135.

g's College Hospital, Denmark-hill, S.E.—Sambrooke Medical Reg. £175. Also Two Jun. Surgeons.
mington Spa, Warneford General Hospital.—Res. H.S. £165.
hook, Hants, King George's Sanatorium for Sailors.—Asst. M.O. At rate of £200.
rpool, Ministry of Pensions Hospital, Mossley Hill.—Jun. M.O. £300.
rpool Open-Air Hospital for Children, Leasowe.—Jun. M.O. £200.
chester, Ancoats Hospital.—Clin. Asst. to Ear, Nose, and Throat Dept. 10s. 6d. per clinic.
chester, Old Trafford, Royal Residential Schools for the Deaf.—M.O.
chester Royal Children's Hospital, Pendlebury.—Res. Surg. O. and Res. M.O. Each at rate of £125.
chester Royal Children's Hospital, Gartside-street.—Asst. M.O. At rate of £140.
chester, St. Mary's Hospitals, Whitworth-street.—Four H.S.'s, Each at rate of £50.
ldlesex Hospital, W.—Jun. Res. Asst. Anæsthetist. At rate of £80.
ler General Hospital for South-East London, Greenwich-road, S.E.—Hon. P. to Special Dept. for Children. Also Res. M.O. At rate of £250. Also H.P. At rate of £125.
castle-upon-Tyne, City and County of.—Asst. M.O.H. £750.
hampton General Hospital.—H.P., two H.S.'s, and two Asst. H.S.'s. Each at rate of £150.
ingham General Hospital.—H.S. At rate of £150.
's County Mental Hospital, Radcliffe-on-Trent.—Med. Supt. At rate of £1000.
ton and County of Lancaster Royal Infirmary.—H.P. £190.
cliffe-on-Trent, Notts County Mental Hospital.—Med. Supt. £1000.
al Dental Hospital of London, 32, Leicester-square, W.C.—House Anæsthetist.
al Waterloo Hospital for Children and Women, Waterloo-road, S.E.—Hon. Med. Reg.
Mary Abbots Hospital, Marloes-road, W.—Res. Med. Sec. and Reg. £300.
Peter's Hospital for Stone, &c., Henrietta-street, Covent Garden, W.C.—H.S. At rate of £75.
ord Royal Hospital.—Two H.S.'s. Each at rate of £125. Also Anæsthetist. £1 1*s.* per session.
sbury General Infirmary.—H.S. £150.
hampton, Royal South Hants and Southampton Hospital.—Cas. O. £120.
t London Hospital, Hammersmith, W.—H.P. and two H.S.'s. Each at rate of £100. Hon. Med. Reg. £100. Also Hon. Anæsthetist.
lwich Infirmary, Plumstead High-street, S.E.—Consulting Nose, Ear, and Throat Specialist. £105.

Chief Inspector of Factories announces a vacancy for a Certifying Factory Surgeon at Saltcoats (Ayrshire).

irths, Marriages, and Deaths.

BIRTHS.

ENBOROUGH.—On Feb. 25th, at Lismore, Camberley, the wife of Dr. Cuthbert Attenborough, of a son.
BBYER.—On Feb. 25th, the wife of Dr. P. W. Boobbyer, of Warwick-road, Ealing, of a son.
WNE.—On Feb. 26th, at St. Katharine's Precinct, Regent's Park, N.W., the wife of Leonard Foster Browne, M.D., of a daughter.
IS.—On Feb. 23rd, at Lower Berkeley-street, W., the wife of K. J. Acton Davis, M.Ch., F.R.C.S., of a daughter.
Y.—On Feb. 23rd, the wife of S. I. Levy, F.R.C.S., of Harley-street, W., and "Ruscombe," Ranulf-road, N.W., of a daughter.
TIN.—On Feb. 11th, at Piercefield Cottage, Park Village East, Regent's Park, N.W., the wife of E. Kenneth Martin, M.S., F.R.C.S., of a daughter.
DRE.—On Feb. 21st, at Birkenhead, the wife of Dr. L. C. Moore, of a son.

MARRIAGES.

LLIAMS—ANGELL.—On Feb. 21st, at Weybridge, Major A. Scott Williams, D.S.O., R.A.M.C. (Ret.), to Dorothy, daughter of the late Lewis Angell, M.Inst.C.E., F.R.I.B.A., of Eastbourne.

DEATHS.

HAM.—On Feb. 14th, at Menton, Hugh Lowrie Askham, M.R.C.S., L.R.C.P., of Pershore, Worcestershire.
KE.—On Feb. 24th, at Hawthorne, Lansdown, Bath, Lieut.-Colonel W. H. Burke, late I.M.S., aged 69.
KROFT.—On Feb. 23rd, at Hazelwood, Lancaster, Mary, the beloved wife of George Cleminson Cockroft.
EN.—On Feb. 16th, at Oxford-terrace, W., Richard John Cowen, L.R.C.P.I.
OCK.—On Feb. 22nd, Alfred George Clarke Pocock, M.B., M.R.C.S., L.R.C.P., L.S.A.
NCE.—On Feb. 19th, at Edderston-road, Peebles, Thomas Fair Hetherington Spence, M.B., C.M.
ERHILL.—On Feb. 20th, suddenly, at Elm Bank-gardens, Barnes, Arthur Stopford Underhill, B.A., M.D., M.Ch., M.R.C.S., D.P.H., aged 78.
LIAMS.—On Feb. 27th, at Bourne End, Sir Dawson Williams, C.B.E., M.D., F.R.C.P., late Editor of the *British Medical Journal*, aged 73.

.—*A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.*

Notes, Comments, and Abstracts.

CAPTAIN COOK'S DIETETIC SAGACITY.

Dr. R. T. Williamson, in the *Journal of the Royal Naval Medical Service* (January, 1928), draws attention once more to Captain Cook's special contribution to medical science in conducting his long second voyage without any outbreak of scurvy among the crew. He attributed his success entirely to his dietetic precautions, and he enumerates the special articles of food upon which he relied. These were "sweet-wort," given in large quantities as a preventive, "sour krout," a portable soup or broth, and a "rob" of oranges or lemons. He also made a point of taking on board fresh food wherever possible.

Needless to say, when an outbreak of scurvy occurred among Indian troops in Mesopotamia in the Great War, and Lister Institute workers were seeking for portable foods, suitable for victualling an army, their attention was directed to the experience of Captain Cook. They actually made use of the same natural process as he utilised, but in practice, malt, the principal constituent of the sweet wort, was of no use to them. V. Fürst [1] had shown that seeds, upon germination, develop the antiscorbutic principle and his work had been confirmed and extended at the Lister Institute,[2 3] and was made the basis of the principal recommendation. Without a doubt the virtue of Captain Cook's sweet wort must have been due to the anti-scorbutic vitamin, developed in the malt when the barley, of which it was composed, was germinated. But when A. Harden and S. S. Zilva [4] tested modern malt they found that it had no antiscorbutic potency. The explanation lies in the fact that modern malt is kilned, in which process the antiscorbutic vitamin, formed during germination, is again destroyed. Sour krout gave the war workers much thought. When prepared in the modern continental fashion, a process of fermentation is included in the method of preparation, and the cabbage might well retain its anti-scorbutic potency for a long time. For obvious reasons, however, sour krout could not be easily obtained and, as far as is known, is still untested. It would be interesting to know whether it deserves the reliance which Captain Cook placed upon it. Captain Cook's triumph over scurvy was a great victory for empirical knowledge and it is always interesting to look back upon such an achievement and try to interpret it by later exact knowledge. The present instance, however, shows how the inexactness or incompleteness of the record often makes this difficult.

"COMMON HELMINTHS IN MEDICAL PRACTICE." [5]

THIS frankly commercial pamphlet upon santonin contains a summary of present-day knowledge of the life-histories and pathological effects of the roundworm, whipworm, and threadworm, facts and opinions being selected from the literature, over 150 references to which are cited. If conclusions are sometimes drawn over-dogmatically, this in the circumstances could hardly be avoided. Next year will signalise the centenary of the extraction of santonin; that it is still with us is eloquent of its value. Mention is made of the evidence that santonin is not itself anthelmintic, but that in process of its absorption from and re-excretion into the bowel it becomes something which is so, thus falling into line with the action of quinine in malaria, of emetine in amœbic dysentery, and of other active parasiticides in other infections. These considerations suggest, first, that its mode of action is along right biological lines; and secondly, that it is upon such lines that we should look for an anthelmintic efficient against the hookworms. The practice advised conforms with what is known of its mode of action. Apart from idiosyncrasy the dose recommended is grs. 5 for a man, grs. 4 for a woman, grs. 2 to grs. 4 for an adolescent, gr. ½ to grs. 2 for a child, and gr. ¼ to gr. ½ for an infant. Against trichuris and enterobius (oxyuris) a small quantity of added calomel has a virtue by the flow of bile induced. The drug must be allowed ample time—12 hours—to act and presumably to be re-excreted; and must then be removed with the worms by a sharp purge of Epsom salts or castor oil. Helminthiasis of the kinds mentioned is sufficiently prevalent even in temperate countries to prevent the summary dismissal of its consideration.

[1] V. Fürst: Zeitsch. Hyg., 1912, lxxii., 121.
[2] H. Chick and E. M. Hume: Trans. Soc. Trop. Med. and Hyg., 1917, x., 141.
[3] H. Chick and E. M. Delf: Biochem. Jour., 1919, xiii., 199.
[4] A. Harden and S. S. Zilva: Ibid., 1924, xviii., 1129.
[5] Eastern and Russian Trading Co., Ltd., 26A, Finsbury square, E.C.

NEW PREPARATIONS.

WE have received from Messrs. Schering and Co., 3, Lloyd's-avenue, London, E.C., specimens of *Synthalin*, the synthetic preparation whose use is recommended in diabetes. There have appeared in THE LANCET during the last four or five months several authoritative pronouncements on synthalin in the treatment of diabetes, in the light of which the value of the claims made can be estimated. On Sept. 3rd the preliminary reports on this subject to the Medical Research Council were printed in full, and from these it will be seen that synthalin may replace insulin apparently satisfactorily, but only in certain cases. Broadly speaking, the two sides of the insulin action—the depression of new formation of glucose in the liver and the accelerated metabolism of glucose already present in the circulation—are claimed to be represented in the action of synthalin. The question of its practical use has to be decided by the degree to which its beneficial action is complicated by its toxic effects. Without regarding synthalin as an ideal insulin substitute it may be held to suggest hopes of further progress. All the conclusions yet arrived at are drawn from the consideration of a limited number of cases or of investigation extending over a brief period, and will be accepted with caution. Where there is a definite contra-indication of insulin the substitute may fairly be tried, and it is hoped that all medical men using the drug in this more or less empirical way will bear in mind possible toxic effects and keep careful records of their results to serve for future information. The employment of synthalin as a substitute for insulin in Germany appears to be based on evidence derived largely from animal experiments.

We referred in our columns recently (THE LANCET, Jan. 14th and 28th) to a new synthetic remedy entitled *Plasmoquine*, mentioning that, although it was introduced by Prof. Mühlens, of Hamburg, and Prof. Sioli, of Düsseldorf, under the name of plasmochin, and is still issued under that name, it has been registered by the Bayer Products, Ltd. (19, St. Dunstan's Hill, London, E.C.) as plasmoquine. Chemically it is an alkyl-amino-β-methoxy-quinoline salt and is a new synthetic derivative of the quinoline ring. It occurs as a tasteless, light yellow, finely granular powder, freely soluble in alcohol, and only sparingly soluble in water. The action of the acid gastric juice converts it into the freely soluble hydrochloride. Clinically, it has been under trial in cases of plasmodium infection since the autumn of 1925 and satisfactory results are reported in tertian and quartan malaria, and in blackwater fever. In subtertian (æstivo-autumnal) type plasmoquine was found to be more effective combined with quinine than without. The preparation, as now submitted to us by Messrs. Bayer, is made up in tablet form combined with quinine. Each tablet contains 0·005 g. (gr. 1/12) plasmoquine and 0·0625 g. (gr. 1) quinine sulphate. The reason for believing that the addition of quinine renders the plasmoquine distinctly more efficacious in the subtertian variety of malaria, and may therefore render it preferable for prophylactic purposes in undifferentiated cases, may be found in the observations on the effects of plasmochin and "plasmochin compound" on the gametocytes of benign tertian and subtertian malaria, made by Dr. Manson-Bahr in THE LANCET for Jan. 7th, p. 26.

HOSPITALS AND CHARITIES YEAR-BOOK.

AN interesting feature of the latest edition [1] of "Burdett" is a table showing in detail the progress of the Hospital Saturday Fund since 1898, the year in which the street collections were abandoned. Individual funds and their ups and downs can be seen at a glance and the entire movement is thus brought under review. By a convenient rearrangement the institutions controlled by the Metropolitan Asylums Board and the London County Council are now classified with other institutions serving the same purpose, so that all mental hospitals, all sanatoriums, and so on, are now under the same heading. Full particulars of the staff, altitude, climate, soil, and special facilities are now given for each sanatorium, collected from the answers to a questionary sent round to the medical superintendents. New entries give information about the Sunlight League, the Lord Mayor's Fund, Melbourne, the Brisbane and South Coast Hospitals Board, and the Hospitals Board Association of New Zealand. The section relating to provincial teaching hospitals has been expanded so that the personnel of these institutions appears in full. A new subsection is devoted to societies for providing legal aid. The Joint Council of the Order of St. John of Jerusalem in England and the British Red Cross Society has attained an importance which justifies its new place immediately after the King Edward's Hospital Fund.

[1] Burdett's Hospitals and Charities, 1928. Being the Year Book of Philanthropy and the Hospital Annual. Thirty-eighth year. London: Faber and Gwyer. Ltd., 24, Russell-square, W.C. Pp. 618. 21s.

PLAYING AT HEALTH.

IT has rightly been insisted that health must be presen to boys and girls as an attractive thing, worth gaining keeping for its own sake. Too often in the past misgui enthusiasts have sought to frighten children into heal ways by painting a dreary picture of disease, and there still too many books on this subject which have not proper outlook. Dr. J. Maxwell Taylor's recent volu called "The Game of Health" (R. Gibson and Sons, L Glasgow. 1927. Pp. 79. 1s. 6*d*.), is not one of these can be confidently recommended for young children eit as a school reader or as a present for out-of-school ho There is an introductory chapter on games which le straight on to the main idea of the book in Chapter where the "health team" and the "disease team" are out. The various members of these two sides are t dealt with in simple terms and the "playing field" is discussed. The "strategy of the game" is the most import part of the book, and in it guidance on such matters as fo sunlight, sleep, posture, and clothing is presented in clear and sensible way. The central idea is well develop and if there is one small criticism of an otherwise excell little book it is that the author has made no mention of kidneys or sex organs which, with the ingenuity he obvio possesses, he could surely have worked into his sche The modest price should be noted.

A VITAMIN EXHIBIT.

AT the British Industries Fair, which is being held the White City, Shepherd's Bush, till March 2nd, Mes Burroughs, Wellcome and Co. have an interesting exhi of vitamin products, including "Tabloid" Irradia Ergosterol, which finds its chief use as an addition to d known to be deficient in vitamin D. A specimen of V min A Concentrate is also displayed in a tube, the cont of which measure only four-fifths of an ounce. It pres the equivalent of vitamin A contained in 1 gallon of finest quality cod-liver oil. With a view to demonst the space economy of tabloid products the contents "Tabloid" Outfit, measuring only a small fraction cubic foot, is contrasted with the equivalent content their ordinary or uncompressed state, with a capacity nearly 23 cubic feet.

THE "CHARLOTTE" COVER.

THIS cover for the hot-water bottle has features w will recommend it for use with patients or children. this reason it has received recommendation from medical men and from hospitals and nursing homes. It is a well-made bag of plushette, which exactly fits the indiarubber bottle for which it has been designed, while a cap, closely adjusted by studs, protects the stopper. Accidents certainly occur with some frequency through the employment of uncovered bottles, particularly where the patient is very young, or for various reasons unresponsive to pain; this is recognised by the employment of various methods of protection, of which the "Charlotte" cover seems a neat and improved example. The cover is supplied, pink or grey according to taste, by Messrs. C. J. Hewlett and Son, Ltd., Charlotte-street, London, in sizes from 8 in. by 6 in. to 12 in. by 10 in., the price varying accordingly from 19*s*. to 25*s*. per dozen.

A CHEAP RETINOSCOPY LAMP.

Dr. E. C. B. Ibotson (Corris, Merionethshire) wri "There must be many like myself who live in dist where gas and electricity are not available, and who d a cheap retinoscopy lamp. Most of those I have inqu about are not worth the price asked. I have rigged accordingly an acetylene bicycle lamp with a carbon p screen over the glass having a small central aperture. works admirably."

QUEEN'S NURSES.—The name of Queen Victo Jubilee Institute for Nurses has been changed by R Charter to Queen's Institute of District Nursing; all fu Queens are to be the patrons. The institute, which incorporated by Royal Charter in 1889 to provide nur for the sick poor in their own homes, now has 1400 nur associations affiliated to it, and has under its supervi 6300 nurses and midwives, of whom 2700 are Queen's nu Last year these nurses attended three-quarters of a mi cases and paid fifteen million visits.

Hunterian Lecture

ON

ABSCESS OF THE BRAIN:

ITS PATHOLOGY, DIAGNOSIS, AND TREATMENT.

Delivered at the Royal College of Surgeons of England on Feb. 3rd, 1928,

BY E. MILES ATKINSON, M.B., B.S. LOND.,
FELLOW OF THE COLLEGE; ASSISTANT SURGEON, THROAT AND EAR DEPARTMENT, ROYAL UNITED HOSPITAL, BATH.

THE subject of brain abscess is so large that I propose to limit consideration to the common type of case which arises secondarily and adjacent to a focus of infection in the skull—that is to say, mainly to otogenic brain abscesses.

On examination of the literature it is found that any exact description of the general pathology is lacking. Thus Sir William Macewen suggests that an abscess may originate by infection through direct continuity of tissue or by perivascular paths. Preysing reported in 1901 a case which arose from retrograde thrombophlebitis, a report which appears to have been largely responsible for Eagleton's recent elaboration of this mode of infection. But there is no information as to exactly how the infection enters the brain substance or where the abscess starts. Consideration of a few points in the anatomy and physiology of the brain will help in elucidating the problem.

ANATOMY.

The Vessels.—The blood-supply of the brain comes from the circle of Willis by two types of vessel: (1) central branches which pass directly into the base of the brain to supply the central nuclei and the main mass of white matter; (2) cortical branches which pass over the surface, and into the fissures, ultimately dividing into two varieties of terminal branches: (*a*) a large number of short branches which supply the grey matter of the cortex only, and (*b*) a smaller number of longer branches which pass through the cortex to supply a thin layer of subjacent white matter. These are all end-arteries, with no anastomosis between the central and cortical branches, so that there lies just below the cortex and between the terminations of the cortical and central vessels a flat sheet of white matter which is a relatively avascular zone. This zone is present both in the cerebrum and in the cerebellum, but owing to the greater complexity of the cerebellar convolutions its position in the latter is somewhat different. It corresponds to the centre of the white core of each cerebellar folium, which is supplied from either side by the cortical branches, the central vessels supplying the central white matter only. Thus the avascular zone is present in both parts of the brain, but altered in position because of the greater convolution of the cerebellum. It is in this zone, owing to the poor blood-supply, that brain abscesses originate.

The Membranes.—The cortical vessels lying in the subarachnoid space carry down with them into the fissures a sheath of endothelial cells derived on the vessel side from the pia-arachnoid, and on the brain side from the pia mater, the lumen of this sheath being in connexion with the subarachnoid space. These spaces between vessel and brain substance are known as the perivascular, or Virchow Robin, spaces of the brain, and take the place of lymphatics.

Circulation of Cerebro-spinal Fluid.—These perivascular spaces contain cerebro-spinal fluid which arises, according to Mestrezat,[1] as a filtrate through the walls of the choroid plexus and of all the capillaries of the brain, spinal cord, and meninges. It is poured out into these spaces and normally flows outwards along them towards the surface to be absorbed by the arachnoidal villi and the Pacchionian bodies. But Weed[2] has shown that under pathological conditions, where the pressure of the fluid in the subarachnoid space is increased, the direction of flow in the perivascular spaces may be reversed. Infection consequently can be carried down them from the subarachnoid space, and so into the brain substance. In these two facts, the presence of an avascular zone and the reversed flow of cerebro-spinal fluid in the perivascular spaces, we have the basis of the pathology.

PATHOLOGY OF ADJACENT BRAIN ABSCESS.

The osteitis caused by the original infection in the skull gradually spreads until it reaches the dura, causing a pachymeningitis, with or without the presence of an extradural abscess. This area of pachymeningitis induces a subjacent leptomeningitis, so that adhesions are formed between the membranes and the surface of the brain, shutting off the infected area from the main subarachnoid space, just as occurs around a focus of infection in the peritoneal cavity. From this area of localised meningitis infection passes on into the brain substance by one of three routes—perivascular, venous, or arterial.

The Perivascular Route.

This path was originally put forward as a possibility by Macewen, and is, despite statements to the contrary (Eagleton [3]), by far the most common. Evidence of it was found in 13 out of 16 specimens examined (82 per cent.). The process can best be studied in the cerebellum. Sections of the earliest stage show the pial vessels patent, but their surrounding perivascular sheath distended by a gross infiltration of inflammatory cells, mainly mononuclear, and adherent to, and in places incorporated by granulation tissue with, the cortex. This infiltration passes down with the vessels into the fissure against the normal stream of cerebro-spinal fluid, owing to the local increase of pressure. The attack upon the brain is of an extremely localised nature, marked pathological change, as evidenced by œdema and new vessel formation, occurring in one lobule only. Fig. 1 shows a section of a later stage. A small abscess is seen situated accurately in the centre of the white core of one folium, with surrounding inflammatory changes similar to those already described. This is the situation of the abscess which is to be expected from anatomical considerations, in the position of poorest blood-supply, the avascular zone in the centre of the folium. It is impossible, except by chance, to obtain such an early specimen of a cerebral abscess, because, while cerebellar abscesses extend backwards, leaving their point of origin more or less intact, a cerebral abscess extends in all directions around, so that its exact point of origin cannot be demonstrated. But by analogy it seems highly probable that the same thing occurs in the cerebrum as in the cerebellum, the abscess starting in the first place in the avascular zone close beneath the cortex.

The Venous Route.

Infection by this route was found only in two specimens out of 16 (12 per cent.), although according to Eagleton [3] this is the common path. It occurs in the cerebellum usually as a result of the spread backwards of a lateral sinus thrombosis through the pial veins, while in the cerebrum it may be the result of a pial vein being caught up in adhesions and thus infected, so that retrograde thrombophlebitis takes place (Preysing [4]). The histological appearances are characteristic. A section of such a case shows a large pial vein containing breaking-down clot, while the arteries are patent. The vessels in the fissure show the same changes, thrombosis of the vein and patency of the artery. There is a surrounding perivasculitis of mild degree, much less than that which occurs in cases of infection by the perivascular route and due to the infected clot in the vein. Further, the inflammatory cells are of a different type, in this case being polymorphonuclear, as against the mainly mononuclear infiltration of perivascular infections. Infection has entered by a fissure, but the perivascular sheath, though adherent, is not so closely incorporated with the cortex as in the previous group, nor is the

inflammation of the cortex of so marked a degree. Fig. 2 shows the extension of the process. The lobule drained by the veins running into the thrombosed pial vessels is degenerating from interference with its blood-supply—note the veins in the fissures, patent, but distended with blood. This interference is sufficient to cause changes even in the well-nourished cortex, but produces its maximum effect at the point of least vascularity, therefore in the avascular zone. Thus one finds again the development of the abscess in the centre of the white core of the lobule, in precisely the same position as that in which the abscess originated in the previous group. One characteristic feature of thrombotic cases is scattered patches of hæmorrhage which occur in the tissue around the abscess, due to the rupture of small capillaries from over-distension. The abscess once formed extends in a different direction from those of perivascular origin. There the cortex is preserved intact owing to its good blood-supply, and the abscess extends backwards through the centre of the infected lobule. Here, however, the cortex is damaged and extension follows the course of the thrombosis—that is to say, outwards towards the surface, and in doing so destroys the cortex. In these cases the abscess is therefore more likely to track to the surface and burst into the subarachnoid space, causing a generalised meningitis.

The Arterial Route.

This, as regards adjacent brain abscess, is the rarest of the three routes, and occurred in only one specimen out of 16 (6 per cent.). Infection of the artery happens again by its involvement in adhesions, its retention close to the infected bone area and consequent arteritis and thrombosis. If before the lumen of the artery is completely occluded a portion of the clot is swept off, and infarction occurs deeper in the brain, the event is signalised by the abrupt onset of symptoms—apoplectiform, convulsive, or paralytic. Fig. 3 shows the condition in such a case. A thrombosed artery is seen with on either side a vein beginning to thrombose. The cortex around shows very little change apart from hæmorrhage, and this lack of cortical involvement, which is seen also in thrombotic cases before the abscess approaches the surface, is characteristic of a vascular as against a perivascular origin. Similarly, the white matter in the region of the abscess shows little abnormality owing to the sudden onset of the process which prevents the mobilisation of any defensive force. Further away from the abscess cavity a slight venous dilatation is noticeable, but the veins are not engorged with blood nor are there patches of hæmorrhage as in the previous group. This is what would be expected from occlusion of an artery, the tissues being depleted of blood rather than engorged.

THE CAPSULE.

Infection having proceeded to the stage of pus-formation this pus is contained within an abscess cavity, to whose wall the term "capsule" has been applied in the literature. The choice of this word is unfortunate, for it has served only to produce confusion of thought as to the real nature of the limiting membrane. It is in no sense a true capsule as the term is applied to the tissue surrounding a tumour, and is nothing more than the ordinary wall of an abscess cavity, such as occurs in any part of the body, differing in histological structure only in so far as the supporting tissue of the brain differs from that in other parts. The term capsule presumably originated from the fact that at operation, or on section of the brain at post-mortem, the wall of a chronic abscess stands out rather sharply from the surrounding soft tissue of the brain by reason of the presence in it of a certain amount of fibrous tissue. But the fact that a special name has been applied to this wall, suggesting that the pathological process is something peculiar to an abscess in the brain as distinct from an abscess in other parts of the body, has led to a mass of literature accumulating upon the subject of encapsuled and non-encapsuled abscesses, both relation to their pathology and treatment.

There is in reality nothing peculiar about the capsu It represents simply the expression of an atten upon the part of the brain to wall off and limit t

FIG. 1.

Abscess developed accurately in centre of white matter, form centre of lobule. Well away from central mass of white mat Inflammatory changes in both layers of cortex; perivascul in fissures.

spread of infection. In the chronic cases with inf tion of low virulence the wall of the cavity will found to consist mainly of fibrous tissue of greater lesser thickness according to the chronicity of the ca and with a consequent variability in the degree neuroglial hyperplasia. Internal to this is a la of characteristic cerebral granulation tissue—v capillaries contained in a supporting tissue endothelial cells, leucocytes, neuroglial cells, a fibroblasts—while external to the fibrous tissue la is an encephalitis of variable degree and extent, chronic cases mild and limited.

In the subacute cases, the most common type, wh the infection is of moderate severity, the essent three layers are still found, though modified. T inner layer of granulation tissue is thicker and m apparent; the middle layer is less definite, contain comparatively little fibrous tissue, but many neu glial cells, while the surrounding encephalitis is m marked and more extensive.

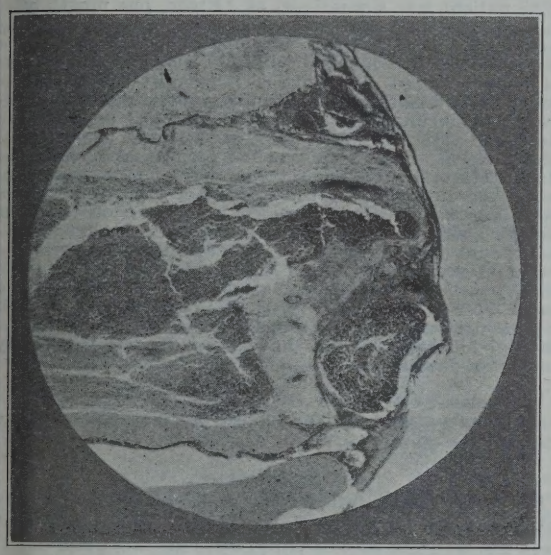
Finally, in the acute abscess, the result eit of a vascular catastrophe or of a fulminating infecti there has been no time for the development of a protective mechanism, and no evidence of a limit pyogenic membrane is found. The contents of t cavity consist of necrotic brain tissue, and a w of acutely inflamed cerebral tissue, which exte more or less widely according to the severity of t infection. This is the non-encapsuled abscess the books and is rather an acute spreading encephali with tissue necrosis than a true abscess.

Direction of Spread.—As the abscess gets larger extends in a definite direction. In the cerebrum increases in size at the expense of the white matt the cortex, by reason of its good blood-supply, be protected until quite late. Extension, though tak place to some extent in all directions, in the m follows the course of the vessels, inwards towards lateral ventricle, into which the abscess may ultimat perforate. The more acute the process the m likely is it to perforate the ventricular wall, whereas chronic cases the choroid plexus tends to beco adherent in the region of threatened perforation a

so prevent its occurrence, acting in the same way as the omentum in the peritoneal cavity. In the untreated case the cortex also will ultimately become involved until only a thin layer of tissue composed of thickened pia and the outermost part of the cortex intervenes between the abscess and the meninges. Eventually, if the patient survives, the cortex may be perforated with the formation of a fistula, so that the abscess discharges spontaneously to the surface, so-called "abscess with stalk."

In the cerebellum extension again occurs at the expense of the white matter, but in this case, of the

FIG. 2.



Abscess in white matter of lobule, extending through cortex to surface along course of thrombosed vessels. Cortex otherwise little affected except for tiny capillary hæmorrhages not well seen in photograph. Veins thrombosed, arteries patent, perivasculitis slight.

white matter forming the core of the lobule, the central mass at first being involved only to a minor degree. The process starts from the anterior end of the cerebellum, picks out one particular lobule, and spreads backwards through that lobule, to which it tends to remain confined. Adjacent lobules are pushed aside and involved only secondarily in the inflammatory process as the size of the abscess increases. It is important to note that the central mass of white matter is not usually destroyed to any great extent; that the abscess itself generally does not approach at all close to the central cerebellar nuclei, in particular the dentate, hence localising signs will be absent unless these nuclei are involved by the surrounding encephalitis; and further, that the shape of the actual abscess is usually ovoid with smooth walls, and not irregular as postulated by some authorities, and stated by Eagleton to be the cause of the difficulty in drainage.

BACTERIOLOGY.

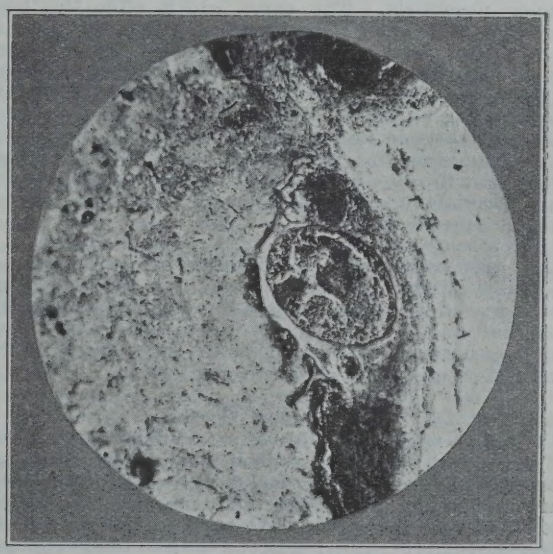
The bacteriology of these cases has been very inadequately worked out, and the results of investigation in the series of cases upon which this lecture is based have not served to throw any further light upon it. Much more work requires to be done before it will be possible to assess the relative pathogenicity of the different organisms found in cerebral abscesses. Lund, of Copenhagen,[5] has produced some evidence which seems to show that in chronic cases the *Bacillus coli communis*, either alone or in conjunction with other organisms, is highly virulent, and that in acute cases the pneumococcus is the organism of which to beware. My own investigations in a very small series (14 cases only) tend to confirm the former observation, though not the latter. It is stated that an anaerobic infection is common, and usually fatal, but sound evidence for this statement is lacking.

REGIONAL PATHOLOGY.

Little needs to be said about the regional pathology of *cerebral abscesses*. Those in the temporal lobe are of otogenic origin, commence in the inferior temporal convolution and spread upwards through the middle, and superior convolutions, and may even become so large as to extend to the neighbouring occipital and parietal lobes, which are otherwise usually involved only by direct infection such as wounds, or by metastatic abscesses. Those in the frontal lobe are secondary to a nasal accessory sinusitis, frontal or ethmoid, and show a high mortality owing to the smallness of the lobe, consequent early perforation of the ventricle, and mechanical difficulties of drainage. In connexion with frontal lobe abscess, it is of interest to mention that cases of brain abscess associated with bronchiectasis, usually considered to be of metastatic origin, are often in the frontal lobe. Adam [6] has suggested, and cited cases in support of his contention, that the real cause in many instances of both pulmonary and cerebral conditions is an unsuspected nasal sinusitis.

Cerebellar abscesses are more complicated as regards route of infection. Like temporal lobe abscesses, they are secondary to infection in the ear, and may be either labyrinthogenic or non-labyrinthogenic. If the former, infection may pass back to the cerebellum commonly by bone necrosis, less often by pre-formed ways, of which there are four: the internal auditory canal, the aqueduct of the cochlea, the ductus endolymphaticus, and the hiatus subarcuatus. Infection by way of the first two more usually results in a

FIG. 3.



Thrombosed artery, two accompanying veins incompletely thrombosed, in wall of abscess. Surrounding acute encephalitis; no evidence of a "capsule."

generalised meningitis; by way of the last is uncommon; which leaves the third, the ductus endolymphaticus, as the usual route in this group. Infection along this route may lead to a cerebellar abscess by formation of a saccus empyema, or by erosion of the bony wall of the aqueduct and the intermediate formation of an extradural abscess. Suppurative labyrinthitis, extradural abscess, and cerebellar abscess are a common triad. If the labyrinth is not involved the route of infection is through the posterior antral wall, either direct through Trautmann's triangle to the dura of the posterior fossa, or more commonly to the lateral sinus and thence to the cerebellum, in either case with or without the

intermediate formation of an extra-dural abscess. Infection having reached the cerebellum enters its substance by way of one of the main fissures, usually either the great horizontal or the fissure below, and this for anatomical reasons. The saccus endolymphaticus lies in relation to the inferior lip of the great horizontal fissure, while the knee of the lateral sinus lies actually on the fissure and turns downwards over the postero-inferior lobule. These being two common routes of infection, it would appear that the postero-inferior lobule is the one most likely to be involved by the cerebellar abscess, and this has in fact been found to be the case in the present series.

DIAGNOSIS.

Discussion of diagnosis will here be limited to the early and less generally recognised signs. The value of early diagnosis as a prelude to successful treatment is as great in this as in other morbid conditions, but the signs generally described are not early, being, on the contrary, rather late manifestations. Continuous severe headache, vomiting of cerebral type, papill-œdema, persistent subnormal temperature and pulse—these, when they are present, are the signs not of an abscess, but of increased intracranial pressure, and therefore, if caused by an abscess, of one either of large size and long standing, or of one surrounded by a considerable area of encephalitis. This increased intracranial pressure has a markedly deleterious effect upon the resistance to infection of the brain substance, and to await its onset before making a diagnosis is materially to diminish the patient's chance of recovery. Again, the well-known localising signs—contralateral paresis and aphasia in temporal lobe abscess; nystagmus, pointing errors and disturbances of muscular tone and coördination characteristic of cerebellar cases—are also evidence of a large abscess or of surrounding encephalitis, both conditions which impair prognosis. The cases which offer the best prospect of recovery are those in which the abscess is of recent development and still small, or is caused by an organism of low virulence so that tissue reaction is good, the abscess wall definite, and the surrounding encephalitis minimal. It is precisely in such cases that diagnosis is most difficult, for until they have attained a large size, these are silent abscesses whose presence will only be suspected by the accumulation and correlation of a number of small and inconspicuous manifestations.

For purposes of description the clinical course of a brain abscess is commonly divided into four stages: the stage of onset, the latent stage, the manifest stage of increased pressure and localising signs, and the terminal stage. With the two latter, the late stages, we have here no concern. It is the importance of the first two stages that I wish to emphasise.

The Stage of Onset.

This is a transient affair of a few days or less, and is characterised by an initial feeling of chilliness, possibly even a rigor, headache, some rise of temperature, and nausea or vomiting. These symptoms are the result of the extension of the inflammatory process from the focus of infection in the skull to the pia mater, causing a circumscribed cortical encephalitis. They are, of course, common to the onset of many diseases, but when they are associated with an adjacent focus of infection such as an acute, or more especially a flaring or grumbling chronic, suppurative otitis media, they should at least suggest the possibility of something more serious than merely an attack of "influenza." In some cases, especially in children and in those of vascular origin, a "fit" is the first sign and may occur suddenly when the patient is apparently well. With an associated suppurative focus this onset of convulsions is stated by Eagleton, and in my experience rightly, always to indicate an intracranial extension, and is the expression of a cortical instability due to irritation from without or to involvement by a process within the brain. An extradural abscess may be sufficient cause. I have seen a case in which an extradural abscess from a frontal sinusitis in a man of 29 was heralded by generalised convulsions and in which cure resulted from simple drainage of the abscess. This is the exception. More often an intracerebral cause must be sought, and the type of fit may give an indication of its situation. A lesion in the temporal lobe results in convulsions of a generalised type, frequently followed by some degree of contralateral paresis. In the frontal lobe they are also generalised, but may start with a conjugate deviation of the head and eyes, while in the parietal lobe they are of Jacksonian type. In cerebellar lesions fits are not characteristic and are a late phenomenon. The following case of the sudden onset of convulsions well illustrates the importance of a due appreciation of this sign.

The patient was a small girl of 2½ who, one month after the onset of a right acute suppurative otitis media following measles, had a generalised convulsion lasting one and a quarter hours, in which twitching of the left side of face and body occurred. When the child recovered consciousness she was drowsy and fretful and had a slight left hemiparesis, which improved during the day and was scarcely detectable after 24 hours. No other signs of an intracranial lesion apart from some drowsiness could be found. The original diagnosis of a right temporo-sphenoidal abscess was overruled by the opinion of a physician and a second aurist, but it was decided to operate on the right mastoid. This was found to be widely infected, but a small area of dura exposed looked healthy and pulsated normally so that no exploration of the brain was undertaken. The patient's condition improved somewhat after this, but a month later she suddenly became unconscious and died. At post mortem a huge chronic abscess was found in the temporal lobe which could have been drained with every prospect of success at the time of the mastoid operation.

This case also brings out forcibly the fact that an apparently normal and pulsating dura is not evidence against the existence of an abscess.

The Latent Stage.

The latent stage follows the stage of onset and may last for days or weeks. It is said commonly that there are no signs at this time, but this most emphatically is not correct. The signs are there, and the aim must be to appreciate them and make a diagnosis in this stage. The patient has passed through a sudden short-lived illness—the stage of onset—from which he has to some extent recovered, but *not completely*, and he has a focus of infection in the skull, such as a running ear. The conjunction of these three events—a focus of infection, a short, acute illness, and an incomplete recovery—should raise strong suspicion of some intracranial extension from that focus. Once suspicion is aroused a search will be made for confirmatory signs, and the following are briefly what may be expected.

Mental changes are very constant, and perhaps the most important of all at this time. A child is apathetic and listless, will not play with his toys and does not resent their being taken away. An adult is drowsy, lacks concentration, and allows his attention to wander; his memory may be faulty and his cerebration slow, so that there is a distinct pause between question and answer, though the answer when it comes is intelligent and correct. A change of disposition is not unusual, the normally good-tempered individual becoming fretful and irritable.

The *general appearance* is often very characteristic. The patient has a greyish unhealthy complexion, looks seedy, the tongue is furred, and the appetite poor.

Headache is always present to some extent, but is not continuous. It is rarely severe, more a dull aching discomfort, and seldom a day passes without it. It is not commonly localised, and if it is the position of the pain bears no constant relation to the position of the abscess. Percussion over the site of the suspected abscess sometimes produces or increases the pain.

The *temperature* and the *pulse-rate* may be of great assistance, and these suspected patients should always be put on a four-hourly chart, or even better, a two-hourly. The temperature is not the accepted subnormal, but shows considerable irregularity about the normal level, as of a septic temperature low down the chart. It may be raised throughout. The pulse

rate in general corresponds with the temperature and is seldom unduly slow, but in most cases it does fall once in a while and become definitely subnormal in relation to the temperature. This is only a transient drop, but is of the greatest significance, and it is to catch this drop that the two-hourly chart is so useful. In a recent case in which the temperature was persistently 99° to 100° or 101° F., and the pulse-rate 90 to 100, a drop on two occasions to between 60 and 70 was a very important factor in deciding to explore.

Lumbar puncture may be of assistance and should be done, as it is a safe procedure in the early days, and only a small quantity of fluid is required. Any increase in pressure or in cell count, with diminished percentage of chlorides, will be valuable confirmatory evidence. For a full account of the changes found in the cerebro-spinal fluid in abscess cases reference should be made to the recent book by Greenfield and Carmichael.[7]

The brief history of one case may help to point the moral of this tale. A boy of 6 was brought to the out-patient department with the story that for two years he had had a running ear, off and on, following scarlet fever. A fortnight before he had a "bilious attack," since when he had complained of headache, and for one day of pain in the ear, which had been discharging again. He had a large marginal perforation in his drum, the tympanum contained granulations, and there was slight tenderness over the mastoid antrum. He looked seedy, was rather sleepy, and took no interest in the proceedings at all. Temperature, 99·4° F.; pulse-rate, 96; resp., 24—nothing very remarkable. There were no signs in the central nervous system. He was admitted with a diagnosis of chronic suppurative otitis media with exacerbation, (?) some intracranial complication, because of his general appearance and the story. At operation, the tympanum and mastoid antrum contained cholesteatoma and offensive pus, and in one place the dura was found bared by erosion, but pulsating and covered with apparently healthy granulations. Nevertheless, it was decided to explore, and while enlarging the bony opening into the middle fossa, a small sequestrum was removed, followed by stinking pus oozing through a small opening in the dura. An abscess containing nearly half an ounce of pus was found and drained, with ultimate recovery of the boy.

Had full credit not been given to the history and mental condition of the child in this case it is improbable that the abscess would have been found at the first operation as there would have been no reason for a further exposure of the dura.

Localisation.—Having diagnosed, or suspected, an abscess in the early stages, it is of advantage to have some idea of its localisation. This is often not possible, and both cranial fossæ may have to be explored, or, at any rate, their dura exposed. But certain indications may put one on the right track. Thus with a focus in the ear a complaint of headache mainly frontal or occipital suggests a cerebellar lesion, as do also suboccipital tenderness or pain or a stiff neck. The association, with general signs of an abscess, of a dead labyrinth or of a thrombosed lateral sinus, would also point to a localisation in the posterior fossa. Per contra, the absence of any of these conditions would lead one to expect the abscess, if present, to be in the middle fossa, where, especially on the right side, abscesses are notoriously silent.

TREATMENT.

If, then, the position be accepted that an abscess must be suspected on much more slender evidence than has so far been considered adequate, the case for the need of earlier exploration of the brain is made. I am far from suggesting that every case of otitis media which has flared and has a headache should immediately have his brain explored; enthusiasm must be tempered with discretion. But I do suggest that it is far better and safer to explore half a dozen brains unnecessarily than to leave one abscess undiscovered for want of exploration. For the latter will die, whereas the other half dozen will come to no harm. Brain exploration with reasonable precautions is a safe and simple procedure, is painless, can be done in bed through an area of exposed dura without an anæsthetic, and is productive of no harmful after-effects. Yet even on the part of otologists, who realise these facts better perhaps than most people, there seems to be a great aversion from taking a chance. The dura is exposed time and again, but too often the evil hour of exploration is put off.

Indications for Exploration.

These are briefly three: (1) Where there are definite localising signs. Our ambition must be to catch cases earlier than this. (2) Where there are general signs of intracranial suppuration associated with a neighbouring focus of infection. The early appreciation of these general signs has formed the gist of the previous section of this paper. (3) Where intracranial symptoms have persisted or recurred after drainage of the primary focus. There are many patients with vague intracranial symptoms which clear up entirely after the focus of infection has been dealt with. In such indefinite cases the correct procedure without doubt is to operate on the mastoid and at the same time inspect the condition of the lateral sinus and the dura of the middle fossa, leaving a widish area of dura exposed and packing the wound open. If the suspicious symptoms do not subside, or if they become more marked, it is a simple matter then to explore the temporal lobe, this being the likely site of the abscess given an intact labyrinth and lateral sinus, and healthy bone between. In suspected cases a dura normal in appearance and pulsation should not be considered as a contra-indication to exploration.

Route of Approach.

Opinion is nowadays fairly unanimous that the best route by which to approach an abscess of the brain is via the originating focus, for which reason the treatment of the condition has passed largely out of the hands of the general surgeon into those of the otologist. There are many advantages in this method. It deals with the source of the infection; the track into the brain can be followed if found and drainage instituted through an area of subarachnoid space already shut off by adhesions; and any additional complication such as an extradural abscess or lateral sinus thrombosis will not be overlooked. The advantages claimed for exploration and drainage through a clean area seem to be theoretical rather than practical, and are not commensurate with the risk of leaving untouched the source of infection and any other possible complications. Therefore a frontal abscess will be approached via the frontal sinus, a temporal abscess via the mastoid with removal of the tegmen, a cerebellar abscess via the mastoid, and an abscess following a wound via the track of the wound. The only one of these which needs enlarging upon is the case of a cerebellar abscess.

Infection enters the anterior end of the cerebellum either by way of the sinus, the labyrinth, or the bone of Trautmann's triangle, and, following the principle of exploring along the path of infection, the abscess should be sought from this aspect. It is undoubtedly the surest way of finding a cerebellar abscess. But drainage presents difficulties on account of the limited space, especially in the event of a forward sinus. If the sinus is thrombosed the problem is simplified; as the sinus has to be obliterated, brain exploration will probably be undertaken through its inner wall, and the dural exposure can be increased to any desired extent by removal of bone on either side. But should the sinus be uninfected the problem of obtaining room becomes more difficult. It is generally recommended that the labyrinth should be opened by Neumann's method, in order to provide this space. This does not appeal as very sound surgery, unless the labyrinth is already dead, for it involves the destruction of a functioning special organ. Further, the extra space provided is not unlimited, and the presence of a drainage-tube in such close proximity to the sinus does not conduce to a feeling of security. I have seen secondary hæmorrhage and infection of the sinus occur from pressure of the tube. Counter-drainage behind the sinus enables a smaller tube to be used in front and a large one behind and is an effective measure for preventing the pooling of pus in

the posterior part of the abscess cavity, which becomes the most dependent part in the recumbent position. But the procedure which seems the most reasonable of any, and which has proved very satisfactory, is deliberate obliteration of the intact sinus. By this means destruction of a functioning labyrinth is avoided, the danger of tube in contact with sinus is overcome, the abscess cavity can be opened up in its entire length if necessary, the operation has no ill-effects upon the patient, and finally it takes much less time than opening up the labyrinth, especially if it is also necessary to do a radical mastoid and remove the promontory to provide drainage.

Some Points of Technique.

(1) *Dural Exposure.*—It is generally agreed that the ideal place through which to explore the brain is along the track of infection, and therefore a thorough exposure of the dura of both fossæ, if necessary, should be made to search for the point of entry. This is not always easy to find at operation, and too much time should not be spent in searching for it. But in the great majority of cases there is a macroscopical point of entry to be found, as is shown by an examination of post-mortem and museum specimens.

(2) *The Use of Antiseptics* should be limited to the dura, upon which they have no harmful effects. It can be sterilised with spirit before incision. The introduction of gauze soaked in iodine into the subdural space to encourage the formation of protective adhesions is unsound. The brain has little resistance to trauma, bacterial or chemical, and the application of antiseptics to it induces an encephalitis and defeats its own ends, a lesson which was learnt in dealing with war wounds of the brain.

(3) *Exploration.*—Having exposed and sterilised the dura and packed off the bone cavity, one is in a position to explore. In the absence of any sign of a track, blind exploration must be undertaken through an incision in the dura. It is better not to explore in more than one direction through the same incision. Three small openings should be made about a quarter of an inch apart with a tenotome, and exploration in different directions made through each incision, otherwise it is possible that pus passing along one exploration track might infect another track which had been unsuccessful in finding the abscess. Further, if several unsuccessful explorations have been made through one incision and later an abscess discharges down one of those tracks, it is impossible to tell which one leads to the abscess.

(4) *Exploring Instruments.*—In general cutting instruments such as tenotomes are to be avoided owing to the risk of dividing a large vessel in the brain substance. I have seen a patient die, and found his ventricles full of blood post mortem, as a result of the injudicious use of a tenotome, the brain, moreover, containing an undiscovered abscess. A cannula is unsatisfactory owing to its tendency to get blocked with thick pus. Some form of angled dilating instrument, such as aural or nasal dressing forceps or a laryngotomy dilator, is very satisfactory, and drainage-tubes can readily be passed along between the blades.

(5) *The Direction of Exploration* should be towards the ventricle in the cerebrum if working from the known point of entry, and backwards in the cerebellum. If working blindly the anterior end of the temporal lobe must be remembered, as abscesses situated here are very liable to be missed. My last case was such a one, only found at the third time of exploration three inches anterior to the roof of the antrum, and I have seen others. In the cerebellum the direction of blind exploration should be always backwards, and upwards or downwards, that is, either side of the great horizontal fissure, if working from the anterior aspect. The instrument should be advanced little by little and opened at each pause if the abscess is not to be missed.

Treatment of the Cavity.

When the abscess is located the exploring instrument is held in position while the original dural incision is enlarged in a crucial manner. The forceps are then opened and a long-bladed Thudicum's speculum is passed along as far as the cavity which can thus be inspected by means of a head-lamp. Finally, two rubber drainage-tubes, one of large bore and the other about half the size, are passed into the cavity between the blades of the speculum to reach just above the floor, and are firmly secured in this position by stitching to one edge of the skin incision. The bone cavity is packed with bipped gauze and the wound left wide open. I believe that nothing more than the insertion of a drainage-tube is advisable as far as concerns the immediate treatment of the cavity. Some authorities, however, advocate a much more complicated toilet. Neumann recommends exploration of the cavity with the finger to feel for small pockets. Whiting has devised an encephaloscope wherewith to inspect the cavity, while others advocate careful mopping out of the whole cavity with pledgets of wool. I am convinced that these procedures are wrong, for the brain is a delicate tissue, easily damaged, much less easily repaired. Moreover the walls of an abscess in the brain are in the majority of cases tenuous and soft, and even gentle palpation could scarcely avoid damaging them, far more so the introduction of an encephaloscope. Insertion of a speculum is, I think, justifiable in order to ensure that the drainage-tube is placed in the cavity and not short of it, or along side it.

With regard to the method of drainage, the two-tube method is very satisfactory. The tubes are of different bores, the smaller one to run fluid through during after-treatment, and the larger to allow it to flow away rapidly and so avoid any pressure in the abscess cavity. Innumerable other methods have been suggested, many no doubt equally satisfactory. The only one in particular that I would protest against is the insertion of any form of gauze, particularly of gauze impregnated with an antiseptic, for it acts not only as an irritant increasing the encephalitis, but rapidly becomes soaked with pus, and serves then as a plug rather than a drain.

After-treatment.

This should be carried out once daily by the same person, if possible by the surgeon in charge of the case or a trained assistant, for much damage may be done by an inexperienced person. The patient sits up in such a position that the tubes are dependent, and it is often surprising how much pus drains away simply by this alteration of position. The cavity is very gently washed out with saline or Ringer's solution through the small tube until the washings come away clear. This is a purely mechanical process, and the introduction of any antiseptic whatever is to be condemned. The cavity is carefully emptied by posture and the dressings are replaced. If the discharge is very copious the outer dressing may be changed as often as necessary, but the abscess itself should be left alone. The two tubes are best left undisturbed for about a week until a track has formed, and when ultimately they are removed for cleaning they should be taken out one at a time, replacing one before removing the other, and making quite certain that the tube is actually in the abscess cavity. If only one tube is used, or if both are removed at the same time, it is very easy in replacing the tube to make a fresh track and place it alongside, and not into the abscess. Drainage should be maintained until the abscess cavity is completely obliterated.

If these various points are carried out with meticulous attention to detail complications such as pocketing, second abscess formation, and hernia, which are due in the main to defective drainage, will be little likely to occur.

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OBSERVATIONS ON THE MECHANISM AND ELEMENTS OF PLEURAL PAIN.

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It is generally accepted that the pain associated with inflammation of the costal pleural membrane is sharp and lancinating, that it is more intense on coughing and at the end of a deep inspiration, and that it abates on expiration; that it is experienced in the lower part of the chest, usually in the region of the anterior axillary line; and that pleurisy towards the apex of the lung causes a dull ache and not a sharp inspiratory pain. Further, it is accepted that the visceral pleura is insensitive, that the costal parietal pleura is richly supplied with sensory nerves (from the intercostals), and that certain types of irritation or stimulus to the membrane are experienced by the patient as definitely localised pain. Considerable differences of opinion exist, however, on the mechanism of production of pleural pain. The most generally accepted view is that it is produced by the inflamed pleural membranes rubbing and pressing against one another. This may be termed the *friction theory*. Mackenzie [1] was the first to question the friction theory, and he advanced the *muscular theory*, namely, that the pain is due to hyperalgesia of the intercostal muscles. He based this theory mainly on the assumption that the parietal pleura, like the visceral, is insensitive. Recently Bray [2] has enunciated what he calls the *tension theory* of pleural pain, viz., that the pain is caused mainly by tension or stretching of an inflamed parietal pleura.

The following cases are interesting as examples of varying types of pleurisy studied with the object of determining the mechanism and elements of pleural pain; in the main they tend to support Bray's tension theory. For the purposes of this paper cases of diaphragmatic pleurisy have been excluded, as the mechanism of the primary and referred pains in this condition differs from that of costal pleurisy. The sensory nerve-supply of the diaphragmatic pleura is also more complex (see Capps [3]).

Acute Pleurisy Supervening during Artificial Pneumothorax.

I have observed in many instances that when pleurisy comes on during the course of an artificial pneumothorax, the pain is similar in all respects to that of acute pleurisy when the lung is not collapsed—i.e., it is more severe during inspiration and diminishes during expiration, and is felt almost invariably towards the base of the chest. In addition, during the acute stage, an area of hyperalgesia of the skin is constantly present. The following case is a typical example.

A girl, aged 19 years, had pulmonary tuberculosis involving the left lung. Artificial pneumothorax was induced on Nov. 20th, 1926, and complete collapse was obtained about five weeks later. On May 13th, 1927, three days after a refill had been given, she complained of severe pain in the lower part of the left side of the chest. She described the pain as "like a knife going through the chest from front to back." On further questioning she said that the pain was worse on coughing and during inspiration. She also complained that the skin over the region of the pain was tender to the touch.

On examination the signs of complete pneumothorax were found. A succussion splash was not heard. As would be expected, no friction rub could be detected. An area of hyperalgesia of the skin was found over the lower part of the front of the chest and axilla, about 8 in. in diameter, involving the areas of skin supplied by the sixth to the ninth intercostal nerves. The distribution of the hyperalgesia was not segmental. An X ray examination of the chest showed that the left lung was completely collapsed. The hyperalgesia persisted for 12 days, and a succussion splash was heard on the fourth day after the onset of the pain, showing that a small pleural effusion had formed. The characteristic pleural pain lasted for about eight days. On one occasion during the period of acute pain, an attempt was made to determine the intrapleural pressure, and it was found, on introducing the needle of a hypodermic syringe into the parietal pleura, that the membrane was exquisitely tender, and that novocaine failed to produce local anæsthesia.

This was a case of acute pleurisy coming on while the lung was collapsed. The pain was characteristic of pleural pain—i.e., it was worse on coughing and at the end of inspiration, and abated during expiration. The lung was definitely collapsed, and there was no possibility that the pain was caused by friction between the two layers of the pleura. An additional element was the broad area of hyperalgesia, which persisted for twelve days. The parietal pleura was extremely sensitive, and the patient was able to localise accurately the pain caused by the introduction of a needle into the pneumothorax cavity.

Pneumonia Complicating Pulmonary Tuberculosis.

A man, aged 49, admitted on Feb. 18th, 1927, under Dr. G. T. Hebert, who kindly allowed me to study and report the case. He had suffered from chronic bronchitis for 26 years, and was subject to attacks of asthma. For several months his general health had been failing, and tubercle bacilli had been found in his sputum. For ten days after admission his temperature chart showed a typical evening rise to 99° F., but on March 1st he developed a sharp pain in the lower part of the right chest; the temperature rose to 101° F., and the respiration-rate to 40 per minute. He described the pain as "a knife going through the chest," and as more intense on inspiration. The cough was suppressed, as it caused great pain, and he complained that the pressure of the bed-clothes hurt his side. There was an area of cutaneous hyperalgesia 4½ in. in diameter on the postero-lateral aspect of the right side of the chest, extending from the eighth to the twelfth rib (not segmental in distribution). On auscultation, a loud friction rub was heard exactly over the area of hyperalgesia. The inspiratory pain was experienced by the patient in the same place. Elsewhere over the right lower lobe the breath sounds were distant, and medium crepitations were heard. The acute fever and rapid respirations persisted for ten days, after which the case resumed its usual character. The hyperalgesia persisted for four days, the inspiratory pain for six days, but the friction rub could be heard as late as the tenth day.

The important points were: (1) that the friction rub could be heard even after the pain had ceased, showing clearly that friction per se is not the cause of pleural pain; (2) that the friction rub and the area of hyperalgesia were exactly superimposed; and (3) that the hyperalgesia was a single broad area of non-segmental distribution.

Acute Pleurisy Associated with Fibrosis of the Lung and with Pleural Adhesions.

A woman, aged 46, whose illness started in 1911 with hæmoptysis. For three years she was quite well, until in March, 1914, she developed a pleurisy with effusion on the right side. From then until the present time she has been under regular supervision. She has had frequent attacks of pain, pleural in type, on the right side, with dyspnœa and occasional hæmoptysis. In May, 1926, she was found to have definite fibrosis of the right lung. X ray examination showed that the heart was displaced about two inches towards the right side, and calcified opacities were seen in the right lung. It seems reasonable to assume that dense pleural adhesions were present at the right base. On Dec. 4th, 1926, she had an attack of pain in the right side, associated with a slight hæmoptysis. She described the pain as "going through the chest like a knife," and as worse on coughing and on "breathing in." She also complained that the skin was tender. On examination it was found (1) that the heart was displaced to the right; (2) that an area of cutaneous hyperalgesia about five inches in diameter was present on the lateral wall of the chest, extending above to the fourth rib, in the mid-clavicular line; (3) that the breath sounds were distant over the right lower lobe, but that crepitations, superficial in character, could be heard over the base of the chest, especially over the site of the pain.

The side was strapped and the patient sent home to bed. When she was seen after a week, the pain and hyperalgesia had disappeared.

The essential points in this case appear to be: (1) The pain was of a typical pleural character, and was due probably to tension or stretching of the inflamed parietal pleura. (2) Owing to the dense pleural adhesions preventing friction between the pleural membranes, superficial crepitations and not a friction sound were heard. (3) The cutaneous hyperalgesia

was, as in Case 2, situated over the apparent area of pleural inflammation. It seems to be a reasonable deduction that, as the skin of the chest wall and the costal parietal pleura are supplied by the intercostal nerves, the areas of skin and pleura supplied by the same nerves are more or less superimposed.

Acute and Chronic Pleurisy in Unresolved Pneumonia.

Cases of mild, ambulant, unresolved pneumonia are comparatively common. The following case is a typical example and presents several instructive features concerning the nature of the pleural pain.

A woman, aged 32, attended the out-patient department on May 10th, 1927, and gave a history of having had cough and sputum, sweating, dyspnœa, and pains in the chest for 14 days. She had not stayed in bed because her husband had not allowed her to. She described the pain as being like a knife going through the left side of the chest, and as being worse on coughing and breathing. The temperature was 100·4° F., and the respiration-rate 28. Her skin was slightly cyanosed, the percussion note was impaired at the left base, the breath sounds were distant, and a few faint crepitations were heard over the same area. No friction rub, hyperalgesia of the skin, or deep tenderness was present. The heart was not displaced. Tubercle bacilli were not found in the sputum. The X ray report was "opacity at the left base; suggests resolving pneumonia."

She was kept under observation at intervals until August 30th, 1927, during which time the pains in the left side persisted, but gradually became less severe. It was noticed that she developed a slight tenderness on deep pressure over the skin of the lower part of the left side of the chest. Further X ray examination showed that the opacity at the left base had cleared considerably, but that some shadowing was still present. In December, 1927, it was noticed that the heart was displaced a little to the left. She still complained of pains in the left side, but they were more dragging in nature.

It appears that this is a case of very early fibrosis of the lung following an unresolved pneumonia, the pains being due to adhesions dragging on the parietal pleura. In this instance the usual initial hyperalgesia of the skin was not observed, as she was not seen until 14 days after the onset of the illness.

Discussion.

The four cases briefly described illustrate several factors in the production of pleural pain. In the first case the friction theory does not explain the pain, because the pleural surfaces could not possibly rub against each other; in the second, the existence of a friction rub without pain suggests that friction is not the primary factor; in the third, the characteristic pleural pain was present, although friction was prevented by pleural adhesions. In all three cases the additional factor of cutaneous hyperalgesia was present. The fourth case shows, in the first place, the presence of pleural pain without a friction rub, and, secondly, the dragging pain and deep tenderness associated with comparatively recent pleural adhesions.

I have not attempted to state all the points for and against the three theories of pleural pain, as too much space would be required. Bray gives a very good discussion in his original paper,[2] supporting the tension theory. If the friction theory is correct, the pain of pleurisy should be felt equally throughout inspiration and expiration, and not only at the end of inspiration. Strapping the chest with adhesive plaster gives almost complete relief from the sharp lancinating pain, not because friction is diminished or abolished by immobilising the ribs, but because stretching of the costal parietal pleura (which is attached to the inner surfaces of the ribs) is prevented. Mackenzie's muscular theory is based on the erroneous idea that the parietal pleura is insensitive. Again, it is not made quite clear whether the muscular hyperalgesia affects either or both the internal or external intercostal muscles. If both are involved pleural pain would be experienced equally on insp ration and expirat on. It seems quite possible that hyperalgesia of the intercostal muscles or of the deep fascia exists as a secondary element of the pain of the acute stage of pleural inflammation, but, if so, it is masked by the cutaneous hyperalgesia. The observation that the pain of acute pleurisy subsid when a pleural effusion forms is frequently cited i support of the friction theory, because frictio between the two layers of the pleura is thus pr vented. At least two alternative explanations ca be given: (1) That the pain is present during th acute congestive stage of inflammation of the pleur and dimin shes during the stage of œdema or effusio owing to the fact that, by the exudation of the fluid the end organs of the sensory nerves in the pleur are released from considerable pressure. (2) Tha the effusion causes collapse of the lung and diminish the amount of movement of the affected side of th chest, and also the amount of inspiratory stretchin of the parietal pleura.

The following provisional conclusions may be state as a working hypothesis on which to base furth investigation into the nature of pleural pain.

1. The ma n element of pleural pain—i.e., th sharp lancinating pain worse on deep inspiration- is due to tension or stretching of the inflamed pariet pleural membrane.

2. The tension may act in the plane of the men brane, as in the stretching on deep inspiration i acute pleurisy; or it may act tangentially, as i the dragging pains experienced when pleural adhesion are present.

3. The subsidiary elements of pleural pain are (1) in acute pleurisy, hyperalgesia of the skin ar possibly of the intercostal muscles or deep fasc overlying the inflamed parietal pleura; (2) in chron pleurisy, slight tenderness of the deeper structur (also overlying the affected pleura), either of th intercostal muscles or the deep fascia. In an acu exacerbation of chronic pleurisy cutaneous hype algesia is frequently found.

4. The hyperalgesia of the skin situated over a inflamed parietal pleura is a phenomenon which las usually for five or six days and sometimes longe In the majority of cases it may be taken as an ind cation of an acute inflammatory process of th parietal pleura. Further, in association with cost pleurisy the hyperalgesia is invariably local or dire and not segmentally referred (cf. Head [4]).

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CHRONIC OSTEOMYELITIS IN LONG BONES.

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Chronic bone disease, if syphilis, tubercle, ne growth, and mycetoma be excluded, common presents itself to surgeons in India in one of tw forms.

1. Massive necrosis of the whole or part of th original shaft, which is enveloped in new bone, wi suppuration and sinus formation. This form is d to an attack of acute osteomyelitis, of which it is th sequel; it may cause intense suffering and discomfo to the patient and is liable to end in death fro amyloid disease and exhaustion.

2. A chronic overgrowth and sclerosis of the sha of the bone with or without the formation of sinus In this form there may be no outward sign of th sepsis which is lying in the heart of the bone, n sinuses, and none of the recurring abscesses which a so common in the first form. Sequestra may b formed and vary in size from tiny spicules to conside able fragments.

The outstanding clinical feature of both the varieties is chronicity; they may persist for year from early childhood to adolescence, and fro adolescence far into adult life, until an unusual severe exacerbation of sepsis or the onset of amylo disease ends the patient's troubles. From the actuari

)int of view these cases are "bad lives." The history a depressing one, and usually a record of continuous intermittent suppuration from a persistent sinus or nuses, alternating with recurrent acute trouble, llowed by operation and inevitable disappointment. fter these interludes of pain, insomnia, and fever ıe flow of pus resumes.

The surgical problem is the obliteration of a septic vity with rigid walls. Some have adopted the ethods of a dentist when dealing with a carious tooth, filling the cavity with an amalgam of metals, or the use of decalcified sponge. Others have poured)t antiseptic pastes into the cavity; these set solid ı cooling. Others, again, endeavour to effect the)literation of the cavity by means of pedunculated afts of muscle; this procedure is obviously doomed failure if there is any residual sepsis in the cavity.

The success attending these methods has been, on .e whole, mediocre, but they have all one aim in mmon—viz., the obliteration of the bony cavity. ıe method to be described has the same object, but tains it, not by the introduction of a foreign body to a cavity, but by converting the cylinder of bone to a lath, nothing but the posterior thickness of the aft being left. The free removal of all overhanging ıgments permits the periosteal sleeve to collapse)on the residual strut of bone. New bone is rapidly id down from the contiguous surfaces of bone and riosteum.

Technique.

The conservation of the periosteum is essential in this eration. The incision is made down to the bone on the rgical aspect through the periosteum, for the whole length the diseased area. The periosteum is then carefully parated from the bone with a rougine, which should have chisel edge of razor-like sharpness, so that an abundant pply of bone-cells from the cambium layer is elevated with e periosteum. The subsequent rate of repair will be rectly proportional to the care with which this operation carried out. The periosteum is separated up to the limits the bone which it is decided to retain; it is essential to ntinue the removal of bone until nothing is left but the o plane surfaces of the posterior aspect of the shaft. ith ordinary care, working within the periosteal sleeve, e danger of damage to soft parts is negligible. With an equate incision an ample exposure is secured and nothing ed be done in the dark. Free exposure and a good light e indispensable, for if a focus of sepsis is overlooked the ccess of the operation may be jeopardised.

As soon as sufficient bone has been stripped of its peri- teum the cavity of the shaft is opened by suitably planned ts into the bone. This may be done by an Albee's saw or th chisel and mallet. The electrically-driven saw saves uch time and labour, but the necessary trimming of the aft may be effected with chisel and gouge. The surface bone which remains is carefully scrutinised for areas of crosis, sinuses, or actual perforations, and all diseased sue is energetically removed.

The surgeon then ascertains how far the periosteum and tached soft parts will glide in over the remains of the aft and removes any projections interfering with this, as is important to reduce the number of dead spaces to a nimum.

When the operative area is near a joint great care ust be exercised to avoid damage to the articular rtilage, and the removal of bone should be so anned as to avoid too steep a descent. This is rticularly necessary when dealing with the tibia, too steep a gradient renders it difficult to get the w surface of the bone covered by the flaps of soft ssues and periosteum.

When all the diseased tissue has been removed ere remains a keel of bone to which is hinged on ch side a flap of periosteum which originally covered lf the expanded shaft and which still preserves its iginal connexions with the soft parts and therefore blood-supply. These flaps are united in the line the original incision by interrupted silkworm-gut tures. This abolishes nearly all the dead space, y gap at the upper extremity of the incision being ugged with gauze and allowed to fill up from the ttom. If all the diseased tissue has been removed vities will become obliterated by a vigorous growth close healthy granulations, and there will be no ore discharge than is usual with any granulating surface. Increase of or persistence of discharge means some undetected focus of caries, or recrudescence of caries in some part of the bone, and demands a further minor operation.

Illustrative Cases.

CASE 1.—Aged 28; duration of disease, one year. Admitted May 2nd, 1923. History of much pain and disability in the leg.

Operation (June 10th, 1923).—Great thickening and sclerosis of bone, and caries in medullary canal extending nearly half the length of the shaft. Complete operation, removal of all but a lath of bone so as to leave no over-hanging edges. The separated leaves of periosteum came into good contact with the denuded bone. Convalescence was uneventful, and there was abundant formation of new bone. The wound healed by first intention. Discharged July 28th, 1923. Days in hospital after operation, 49 (seven weeks).

CASE 2.—Aged 22. Necrosis. Chronic osteomyelitis of the right tibia. Leg riddled with sinuses. Duration, ten years. Admission, July 3rd, 1923.

Operation (July 9th, 1923).—Complete operation. Bone greatly sclerosed and thickened. Rarefying osteitis, pus, no massive necrosis, no involucrum. All bone removed in anterior and lateral aspects, only a lath of bone left. The periosteum was carefully conserved. One small secondary operation was found to be necessary. The lower half of the wound healed by first intention, but there was a small cavity left at the upper end which was not quite healed when the patient left the hospital in October. Stay in hospital after operation, 86 days.

CASE 3.—Aged 12. Much discharge, massive necrosis and involucrum. Admitted July 30th, 1923.

Operation (July 31st, 1923).—Complete removal of all but posterior layer of involucrum, cylinder of necrosed shaft removed, as it was lying free in the cavity of the involucrum. Periosteum came into good contact with the denuded area. The lower half of the wound healed by first intention, but a cavity was left in the upper half, which was plugged daily with plain gauze and granulated up. Discharged Sept. 24th, 1923. Stay in hospital, 56 days.

CASE 4.—Aged 12. Chronic osteomyelitis of left tibia. Duration, six months. Admission, June 4th, 1923. Foul and copious discharge. General health very poor.

Operation (June 12th, 1923).—Removal of sequestra and of all but posterior part of the bone. Periosteum in good contact with denuded area in lower two-thirds of the wound. Cavity left in upper third, which was plugged. Discharge persisted, so wound was explored August 21st, 1923, and a large piece of old necrotic bone found under an overhanging ledge. This was chiselled away, and the piece and all granulations removed. Gauze packing, wound securely healed in its entire extent by Nov. 10th, 1923. General condition much improved. Stay in hospital, 152 days.

CASE 5.—Aged 15. Chronic osteomyelitis of the left ulna. Duration, one year. Ulnar border of the arm was riddled with sinuses.

Operation (July 10th, 1923).—Large sequestrum round rather patchy involucrum, many sinuses, periosteum came into good contact with the denuded surface of the bone. Discharged August 29th, 1923. Good formation of bone and wound solidly healed. Stay in hospital, 50 days.

If the solidity of the residual shaft of bone permits the patient should be allowed upon his feet as soon as the wound is soundly healed, or earlier if there is any delay in healing. Use is the best stimulus to bone growth. To secure rapid healing and the best results the surgery must be very bold and radical; half-hearted operations are better left undone.

ROYAL MEDICAL BENEVOLENT FUND.—The following are some additional cases relieved at the last meeting:—

M.B. Edin., aged 40, married, three children, two daughters aged 17 and 4, and son, aged 12. Applicant's appointment abroad ceased in September, 1927, and he and his family arrived in this country in November, and have since been living on what small resources they had which have now come to an end. Has been unable to secure any appointment. £7 16s. was given them by the Social Service and the Church, £6 by the Guild and the Fund voted £10 for immediate necessities.

Daughter, aged 45, of L.R.C.P. who died in 1886. Both she and her sister have supported themselves by teaching in schools, and the applicant is now bedridden from rheumatoid arthritis and is entirely dependent on her sister. Friends have done their best to help with expenses for special treatment, but this has been of no avail. Asked Fund for grant to enable applicant not to be an entire burden upon her sister. Voted £26.

Subscriptions may be sent to the hon. treasurer, Sir Charters Symonds, at 11, Chandos-street, Cavendish-square, London, W. 1.

FRACTIONAL TEST-MEAL ANALYSIS.

A SIMPLIFIED TECHNIQUE, WITH SPECIAL REFERENCE TO CHLORIDE ESTIMATIONS.

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IN theory the study of gastric function by the fractional test-meal method involves the quantitative chemical examination of the variations of both acidity and chlorides. In routine practice, however, full investigation is made of the acidity, but scant attention is usually paid to chlorides, though their importance is obvious. The two factors really go hand-in-hand, for many of the acidity curves can have but very little meaning in the absence of chloride determinations. For instance, the absence of free hydrochloric acid cannot by itself distinguish between an achylia and an achlorhydria due to complete neutralisation, nor, at the other extreme, can mere evidence of a hyperchlorhydria differentiate between hypersecretion and defective neutralisation. Such considerations have been frequently emphasised, notably by Bolton and Goodhart[1] and Baird, Campbell, and Hern,[2] and need not be elaborated here. It must be assumed, therefore, that the determination of chlorides is omitted on account of the analytical difficulties explained below. Indeed, analysis greatly needs simplification, and this paper presents a method which avoids long and difficult technique.

Estimation of Chlorides.

(1) *Total Chlorides.*—The standard method of estimation is to render the sample alkaline, evaporate to dryness, incinerate, and finally determine the chlorides by Volhard's method. The preliminary process takes time and the incineration requires cautious manipulation, patience, and skill. A Volhard titration on the original fluid is vitiated by the presence of protein, but this can be eliminated by the simple expedient of enormously increasing the proportion of nitric acid to test-meal sample in the mixture to be titrated. The whole determination is carried out in one operation, requiring no more than a simple titration of the Volhard type, and in less than one-tenth of the time formerly occupied.

Method.

Take up 0·2 c.cm. of filtered fluid in a blood pipette, carefully discharge this amount into 3 c.cm. of pure nitric acid contained in a wide test-tube, sucking up the acid two or three times to wash out the pipette. Add 1 c.cm. of N/30 silver nitrate solution, and then 4 c.cm. of pure acetone; the latter gives a sharp end-point. Mix, and after adding three drops of a saturated solution of iron alum as indicator, titrate finally from a 5 c.cm. microburette with alcoholic ammonium thiocyanate, previously standardised against the silver nitrate. (Ordinary aqueous thiocyanate of N/10 strength diluted with two volumes of alcohol is a suitable solution.)

Calculation.—Using solutions of exactly N/30 strength, if x be the number of c.cm. required in the titration, then $(1-x)\times\frac{100}{0\cdot2}\times\frac{1}{3}$ gives the degrees of total chloride (i.e., the number of c.cm. of N/10 chloride in 100 c.cm. of fluid). To convert this into percentage HCl multiply by 0·00365.

A series of comparative results, using the incineration method and the present one on samples taken at random from different test-meals, in each case performing the analysis on 0·2 c.cm. of fluid, is compiled in the table below. The figures represent degrees of total chloride.

Sample.	Incineration method.	Present method.
1	133·3	136·6
2	46·6	46·6
3	115·0	115·0
4	80·0	81·6
5	27·6	27·6

The methods agree within the limits of experimental error.

(2) *Mineral Chlorides.*—In the presence of an appreciable amount of free hydrochloric acid it will usually be sufficient to calculate the value of th mineral chlorides as the difference between the tota chlorides and the total acidity, for in such cases th free acid acts as a check to fermentation and th amount of organic acid is negligible. In other case it may be necessary to analyse for mineral chloride For this purpose no departure can be made from th principle of the generally accepted method. Incinera tion—without previous neutralisation—is the essentia feature, but the method as given in the text-books i unnecessarily long, because too much material i evaporated to dryness and then incinerated. Tim can be saved without loss of accuracy by taking one tenth of the usual amount of fluid. Moreover, direc tions are not, as a rule, precise enough as to th conditions under which the combustion should b performed. A Bunsen burner playing directly upo the ignition crucible to give a dull red heat i commonly recommended, but when no more than " dull red heat " is employed an appreciable amoun of chloride is lost by volatilisation. This error does no arise if a fine iron gauze is interposed between th crucible (which should be thin-walled) and the flam and the ignition is expedited if a Meker burner i substituted for the ordinary type of Bunsen. Th entire organic matter in 0·2 c.cm. can by this mean be safely incinerated within five minutes.

Method.

Take 0·2 c.cm. of fluid and discharge it into a porcelai crucible, washing out the pipette with three or four drop of distilled water introduced from a second pipette Evaporate to dryness on a water-bath, and incinerate a described, placing the cover over the crucible for the initia stage. The process is complete as soon as the whole of th black carbonaceous material is destroyed, leaving a grey ash Allow to cool, then take up the residue in 2 to 3 c.cm. c distilled water, and add an equal volume of nitric acid followed by 1 c.cm. of N/30 silver nitrate. Finally ad acetone and iron alum as in the previous method, an complete the titration in the usual manner.

Estimation of Free and Total Acidity.

There is little scope here for simplification, as th method usually adopted (Töpfer's) is one of th simplest of all chemical procedures. The alternativ put forward involves only a minor alteration of tech nique, but most of those to whom the author ha privately communicated it have preferred it t Töpfer's. It replaces Töpfer's two indicators b thymol-blue (thymol-sulphone-phthalein). A fe years ago Cole and Adie[3] elaborated a method c using this indicator, but their contentions wer subjected to well-founded criticism by Ryle,[4] whos essential point is, in effect, that the refinements c their method accomplish nothing clinically whic cannot equally well be achieved by simpler mean But, stripped of these refinements, it provides th basis of a method which is extremely simple—viz when the titration of the free HCl is carried to th point where the red tint, given by the indicator in th presence of mineral acid, just disappears. The assump tion, accurate enough for all practical purposes, is tha only the free acid reacts with the alkali up to th point. Continuation of the titration to the poin of first appearance of the blue colour gives the measur ment of the total acidity. (The significance of thes colour changes will be made clearer by reference to th paper of Cole and Adie.)

Method.

Pipette 2 c.cm. of filtrate into a test-tube and add thr drops of a 0·1 per cent. solution of thymol-blue. In the presen of free HCl the mixture will appear red. In this case titrat with N/10 sodium hydroxide from a 5 c.cm. microburett to the point where the red tint is no longer perceptibl noting the amount of alkali added (x c.cm.). Continue th titration through the range in which the mixture is yellow until the point where it turns sharply blue, now noting th whole of the amount of alkali added from the beginnin (y c.cm.). Then $50x$ gives the degrees of free acid and $5($ the total acidity. If on first adding the indicator the flui appears yellow, no free HCl is present, and the titration simply performed for total acidity.

No comparative figures need be cited. For obviou reasons the three methods discussed give practicall

ıtical results where the amount of protein in solu- ı is very low, a condition which obtains in nearly fractional test-meal samples. However, as Cole ntly pointed out,[5] in the resting fluid, where the tein tends in some cases to be relatively high, a repancy would arise under such circumstances ween the results obtained by the methods of Cole Adie, and Töpfer, the inaccuracy—the more reciable the greater the protein content—being the side of the Töpfer method. Here closer ement with the exact values would be attained using the present technique instead of Töpfer's, on the basis of principles enunciated in the paper ole and Adie, this would follow from the fact that end-point of the initial titration (pH 2·8 approx.) termediate between that of Cole and Adie (pH 2·0), that of Töpfer (pH 4 approx.).

n this score, therefore, as well as on account of its plicity, the thymol-blue method would seem ified.

Summary.

) An easy and rapid method is described for the mation of total chlorides.

) Considerable saving of time and labour results n the estimation of mineral chlorides is conducted micro-scale under the conditions stated.

) A method devised to take advantage, in the iest manner, of the colour changes of thymol-blue, referred to Töpfer's method of estimating free rochloric acid and total acidity.

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THE MEINICKE MICRO-REACTION.

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HE diagnosis of syphilis in patients admitted to a tal hospital is a matter of some importance in of its possible ætiological influence on their hosis. Ordinary clinical examination is fairly tive in discovering general paresis and cerebro- al syphilis, but practically all the cases of latent ilis go undiscovered unless a Wassermann or r serum examination is performed. It is rious, and sometimes very difficult, to withdraw gh serum for a Wassermann in resistive or trouble- e cases, children, and those whose veins are ly developed, and the need for a test that would iate these difficulties has been felt for some . The Health Committee of the League of ions, in its report on the sero-diagnosis of syphilis penhagen, 1923), stated that "the flocculation s cannot at present replace the Bordet-Wasser- n test," but reported favourably on their bility, and mentioned the simplicity of the nicke turbidity reaction. Unfortunately, all e tests require a considerable amount of m. Micro-methods for the Sachs-Georgi test e devised by Scheer and A. H. Priestley,[1] and the Kahn reaction by B. S. Kline and A. M. ng,[2] and by R. L. Kahn himself. Weidainz rted a micro-method for the Wassermann tion. In most of these, however, there arose problem of inactivating a small quantity of m, and the Kahn micro-method involves the culty of measuring small quantities of serum by ns of capillary pipettes.

1 1923 the late Paul Dohnal[3] discovered a micro- hod for the Meinicke turbidity reaction. This was simplified and improved by Meinicke[4] in 1925. The practical value of the test has been amply proved by the investigations of Dohnal, Unter- steiner, Rietschel, Meinicke, and others. So far there has been very little work done on it in this country or in America, though it is extensively used on the continent. The Meinicke micro-serum reaction was first tried at this hospital over a year ago, and we are now in a position to give an opinion on its reliability and utility.

Technique.

1. *Serum.*—This is collected from a finger-prick and the blood run along a capillary tube 10 c.cm. long by 1 mm. inside diameter. Two-thirds of the tube are filled and the empty end sealed by a flame, taking care that the blood is not heated. Only if the capillary is to be sent away does the other end require sealing with wax. The tube is now left for a few hours in a cool place in a horizontal position and then centrifugalised towards the sealed end. The clear serum collects in the centre and is ready for use when the tube has been filed and broken and the contents tapped or blown on to a clean numbered slide.

2. *Antigen.*—Meinicke uses a cholesterin-free extract of horse heart muscle with the addition of balsam of tolu. One c.cm. of this is placed in one test-tube, and in another is placed 10 c.cm. of a 3 per cent. saline solution, to which pure sodium carbonate in the proportion of 1 to 8000 has been added. The two are placed in a water bath at 40° to 45° C. for ten minutes and then mixed by pouring rapidly three times from one to the other. The diluted extract is poured into a warmed porcelain crucible and covered with a watch glass. It has a yellowish tinge and is somewhat opalescent. As it rapidly becomes more opaque it should not be kept longer than ten minutes, in which time from 10 to 15 sera can be mixed with it.

3. *Mixing.*—Two platinum eyelets are used for this mixture. They are measured so that one loopful of the larger contains exactly five times as much as the smaller. The larger, about 5 mm. in diameter, is attached horizontally to a small porcelain stand, and a loopful of the diluted extract is taken on it. On the smaller, which is about 2 mm. in diameter, serum is taken. By passing this one through the lumen of the larger a 1 in 6 dilution of serum with diluted extract is accurately and easily made. The extract and platinum eyelets may be obtained from Dr. Meinicke's laboratory, Elberfelder Str. 74, Hagen, Westphalen, Germany.

4. *Examination.*—Both dark-ground and hanging-drop preparations of the mixture are made and examined within two hours. As several specimens are examined at once no other controls are needed. With the dark-ground illumination, using weak ocular and strong dry objective, a negative reaction shows an even greyish field, full of tiny gaily dancing dotlets. In a positive reaction the field is black, empty, and quiet, and very few dotlets are seen. The hanging-drop preparation is made in the usual way on a hollow slide, using a small loopfulof the mixture. The edge of the cover-slip should be vaselined to prevent evaporation. Here all the planes are optically empty in a negative reaction, save for the almost infinitesimal dancing particles, which are practically invisible. In a positive reaction agglutination occurs, and the clumps, which are at first evenly distributed, gradually sediment towards the lower pole. Blood corpuscles, fragments of dust and bacteria, if present, can be distinguished from true agglutinations by their shape and colour.

For some time now we have dispensed almost entirely with the dark-ground illumination, finding, as Meinicke himself does, that sufficient information can be gathered from the hanging-drop preparation. Our only fresh observation is that a delayed positive reaction has been noted on two occasions, so that it is advisable to re-examine the slides eight or nine hours after the test has been completed. The blood is collected by a trained nurse. Eight or ten of the capillary tubes are sent over to the laboratory at a time, and within a few hours the results of the examination can be sent to the medical officer concerned. Where a positive reading is found, a confirmatory Wassermann test is always performed. All glassware should be absolutely clean and free from grease, and the room temperature for the test should be about 20° C. The atmosphere should be humid.

Experimental Results in a Mental Hospital.

The sera of over a thousand patients have been tested. In 429 of these the Wassermann has been done as a control, and there is an agreement between the

results of the two tests in 93·3 per cent. of the cases. The main source of disagreement between the readings was in those general paralytics whose serological findings had undergone modification after a course of treatment by malarial inoculation and tryparsamide. The test has been performed on all new admissions since June 1st, 1926, and the numbers diagnosed as syphilitic between then and May 31st, 1927, make a most interesting comparison with the corresponding numbers for a year prior to the institution of a routine serum examination.

1925.		*1926–27.*	
Admissions.	Syphilitic.	Admissions.	Syphilitic.
Male .. 260	.. 32 (12·3%)	Male .. 264	.. 58 (21·9%)
Female .. 209	.. 9 (4·3%)	Female .. 190	.. 17 (8·9%)

Of the male admissions in 1925, 30, or 11·5 per cent., were general paralytics. The remaining two cases were of cerebro-spinal and meningo-vascular syphilis. On the female side seven of the nine, or 3·3 per cent., were general paralytics, and of the remaining two cases one was of cerebro-spinal and the other of meningo-vascular syphilis.

In the 1926–27 period the diagnosis of the 58 men and of the 17 females, according to their mental state, was as follows:—

MEN.		WOMEN.	
General paralysis of the insane	43	General paralysis of the insane	5
Meningo-vascular syphilis ..	2	Meningo-vascular syphilis	1
Dementia præcox	3	Dementia præcox	2
Recent and recurrent mania	3	Insanity with epilepsy ..	1
Manic-depressive psychosis	1	Imbecile	1
Senile dementia	1	Secondary dementia (cerebral hæmorrhage)	1
Insanity with epilepsy ..	2	Acute melancholia ..	4
Recent melancholia ..	1	Recurrent mania	1
Confusional insanity ..	1	Delusional insanity ..	1
Paranoia	1		

The very marked increase in the incidence of those diagnosed as syphilitic is most significant, and constitutes a strong plea for the more general adoption of this or some similar method of examination. In practically none of the cases, save those suffering from general paresis or meningo-vascular syphilis, could syphilis have been diagnosed without a blood test, as none showed any typical lesions.

The part played by syphilis in the ætiology of the other psychoses, and the therapeutic effect of anti-syphilitic treatment, is not a question which I propose to discuss at present. It will be noted, however, that if the general paralytics are excluded only 6·7 per cent. of the remainder of the patients gave positive blood readings at the time of admission. The Royal Commission for Venereal Disease estimated that 10 per cent. of the urban population of Great Britain are suffering from syphilis.

Kovács,[5] of the State Asylum for Children, Szeged, Hungary, reports very favourably on his experience of the test when dealing with infants. He resorts to a Wassermann only when the individual reactions of the mother and child give opposite results. The test, therefore, would probably be of great service in pediatric work. It is not suitable for the general practitioner, as he has not the time or material to carry out the routine.

Summary.

The Meinicke micro-reaction, as used in this hospital, has proved a very serviceable and reliable test. It gives a high percentage of agreement with the Wassermann, and has almost doubled the number of those diagnosed as syphilitic.

My thanks are due to Dr. R. M. Clark, medical superintendent, who has supervised the test throughout for permission to publish these results, and to Mr. A. H. Fann, senior laboratory assistant, to whose careful technique it owes much of its success.

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Clinical and Laboratory Notes

A CASE OF FACIAL NEURALGIA ASSOCIATED WITH PULMONARY ABSCESS.

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THIS case is considered worthy of record on accou of the rare distribution of pain.

The Case Related.

The patient, a woman aged 39, was admitted to t Ventnor Hospital on April 17th, 1925. She gave a histo of slight hæmoptysis at the age of 10 years. From 19 onwards she had a cough and occasional attacks of staini of the sputum. In April, 1917, she had pneumonia of t left upper lobe with a very slow convalescence, a high te perature persisting until October of the same year. January, 1918, another attack of pneumonia occurre affecting the same part of the lung and again followed slow convalescence. In March, 1924, one of us (R. C. H saw this patient with a definite pneumonic consolidati of the left upper lobe. From this time onward she had very troublesome cough, slight fever running up to 9 and 100° F. nightly, and two ounces of sputum daily negati for tubercle bacilli. From 1919 till April, 1925, repeat attacks of slight hæmoptysis had occurred. On admissi on April 17th, 1925, there were signs of a cavity in t lower and anterior part of the left upper lobe, such sig being present in the fourth and fifth spaces and occupyi the normal area of cardiac dullness. The sputum was f and had increased to three ounces daily. There was clubbing. X rays showed a large cavity present in the lov and anterior third of the left upper lobe, probably adhere to the pericardium.

On April 27th a left-sided artificial pneumothorax w induced and continued, but the result was not satisfacto the X rays showing a rigid-walled abscess cavity wh showed no sign of collapse, although the peripheral lu was well collapsed round it (see figure). There w considerable mediastinal dislocation. On July 30th defin clubbing was noted. Thoracoplasty was suggested refused. The pneumothorax was maintained as the patie appeared to be more comfortable during its continuan In August a broad single diaphragmatic adhesion was not which appeared to pull on the abscess cavity. This w thought to be a possible additional cause of the troubleso cough, and with a view to eliminating its traction Harold Burrows performed a left-sided phrenicotomy Sept. 20th, 1925. A note, made at the time of the operati reads that something less than ½ in. of nerve was resected.

The X ray report on Oct. 3rd stated: "The diaphra has not lifted in the chest. It shows paradoxical movem —inspiratory rise, very slightly expiratory fall. There apparently a very definite lateral decrease in the size of cavity." On Jan. 1st, 1926, the notes read: "Patient neuralgic pain in the face which started last night. To-d has definite neuralgia of the left inner canthus and alo the left nasal bone. Pain is most severe in the left na bone and occasionally there is a stabbing sensation alo the inferior margin of the orbit. The left eye wat when the pain is severe. There is also pain and tendern on pressure over the upper border of the left trapezius a in the hollow of the left shoulder."

The neuralgic pain decreased considerably after cough and consequent expulsion of the contents of the cavity, a on some occasions disappeared altogether for a time. At a quiet night with little coughing the pain was more seve for example, on Jan. 7th, 1926, the notes read: "Pati has not coughed during the night and now has intense p in the face and nose." The daily sputum varied fr 3 to 24 ounces. The neuralgia persisted until de occurred on March 20th, 1926. The relationship betw the pain and decrease of expectoration was definite, accumulation of secretion in the lung being invaria associated with the onset of neuralgia.

Cause of the Referred Pain.

Any explanation of the cause of the facial neural and reflex pain in the shoulder must be founded the assumption that the phrenic nerve was at t time capable of conveying afferent impulses to t

ntral nervous system. The mediastinal pleura is pplied with branches from the phrenic nerve, and e clinical history suggests that this nerve was agged upon, or otherwise stimulated by the abscess vity when this was full of pus. It is difficult, owever, to derstand how pulses could conducted to e central ner- us system by ie phrenic rve when it is called that lf an inch of length was cised in the ck about three nths before e onset of the in.

In the absence a post-mortem s only practic- le to consider e possibilities, which there pear to be ree. The first that some bres have ssed the gap d descended e distal seg- ent of the rve to reach e vicinity of e abscess. servations on the re- neration of ripheral rves under ilar circum- nces render this explanation highly improbable, ce the interval between the two segments s so great. This explanation cannot, however, absolutely excluded. The second possibility that fibres from the distal end of the proximal gment have sprouted out into the surrounding ep tissues, and some have passed down between e fascial planes in the thorax and so extended to e neighbourhood of the abscess. This appears to quite a reasonable possibility, as after section a nerve it is well known that fibres grow out and ll travel along fascial planes, although most of the res usually cause a reaction in the neighbouring sues which leads to the creation of an "end bulb." serious objection to this hypothesis is the short ie which elapsed between the operation and the set of the pain; it appears hardly long enough to rmit regeneration of nerve-fibres from the level the section to the abscess cavity. The third, and haps the most likely, explanation is the occurrence an accessory phrenic nerve. This arises usually m the fifth cervical nerve, and after passing in front behind the subclavian vein joins the main phrenic nk near the thoracic inlet or in the thorax. This nction between the phrenic and the accessory renic would be distal to the level of the section of e former, and therefore a pathway from the pleura to e cervical spinal cord would persist after the opera- n. The occurrence of an accessory phrenic nerve is ficiently common to render this suggestion highly obable.

Relation of Phrenic and Trigeminal Nerves.

It is easy to understand the referred pain in the oulder, since it is only necessary to refer to the con- xions between the central terminations of the essory phrenic and the central connexions of the scending cutaneous branches of the third and urth cervical nerves which are distributed to the skin in the regions where the pain was experienced. The occurrence of the neuralgia in the upper part of the face is of greater interest and must involve connexions between the phrenic and the central terminations of the trigeminal nerve. It is well known that the spinal nucleus and tract of the latter descends well into the cervical cord, at least as low as the second cervical segment, so that the central fibres of the two nerves are very near and likely to be connected. It has been shown by anatomical and clinical researches [1] that the caudal part of the spinal nucleus of the fifth nerve receives fibres only from its ophthalmic division; the most caudal part would be the segment nearest to the central fibres of the phrenic, and this probably explains the limitation of the neuralgia to the distribution of the ophthalmic division of the trigeminal nerve. A minor point of interest is the development of clubbing of the fingers and toes in sixteen weeks.

Radiogram showing the condition of the lung after artificial pneumothorax and before phrenicotomy. The large pulmonary abscess with a fluid level is not compressed, although the peripheral lung is well collapsed. There is considerable mediastinal dislocation, and a broad basal adhesion is present.

A somewhat similar case has been reported by Ricaldoni [2] in connexion with artificial pneumothorax treatment. In this instance the neuralgia was more widespread and this was considered to be due to the refilling of the pleural space. It disappeared with the discontinuance of pneumothorax.

A CASE OF TRAUMATIC PANCREATITIS.

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A CASE of traumatic pancreatitis has lately been under our care in the General Hospital, Great Yarmouth. Medical literature in Great Britain has few records of such cases, the only one recently recorded to our knowledge is that of Waring and Griffiths.[3] Therefore details of our case may be of interest.

The patient was a Scotch girl of 18, from Stornoway, one of the fish-workers visiting this port during the herring fishing season, in the autumn. She was a strong, healthy girl with no history of previous illness or accident. On Oct. 14th she was caught between a wall and a lorry moving sideways towards her, which nipped her at the level of the upper half the abdomen. She was rapidly conveyed to hospital and admitted between 8 and 9 P.M. On examination,

[1] The Function of the Spinal Nucleus of the Trigeminal Nerve, by J. S. B. Stopford, Journal of Anatomy, 1924-25, lix., 120.
[2] Pneumothorax artificiel et névralgie de la face, A. Ricaldoni, Bull. et Mém. de la Soc. Méd. des Hôp. de Paris, 1921, 3e sér., xlv., 802; Abstract in Tubercle, March, 1922, p. 266.
[3] Waring, Sir Holburt, and Griffiths, H. E.: Brit. Jour. Surg., 1923-24, xi., 476.

no abrasion or bruise was present on the abdomen or elsewhere. She was suffering considerably from shock, with some diffuse abdominal pain. Temperature subnormal and pulse, 84, was thin. No signs of any gross lesion. She received the usual treatment for shock and was kept under careful and constant observation for any sign of internal hæmorrhage. The next morning the temperature was 98° F. and in the evening rose to 99°. She said she was free from pain and her general condition was greatly improved. The pulse was fuller. On the 16th her morning temperature had risen to 101° and the pulse-rate to 100, and she complained of vague abdominal pains, but the temperature fell to 99·4° in the evening and respirations increased to 40. On the 17th the temperature continued to fall, but the pulse increased in frequency, though still of good volume. The pain increased and was accentuated by ingestion of food and relieved by vomiting. The exhibition of bismuth and soda had no influence on the pain which was referred to the epigastrium.

For the next two or three days the pain continued at intervals, but the pulse and respirations diminished in frequency. The temperature was somewhat erratic but fell to normal with a pulse-rate of 84 and respiration-rate of 26 after a copious stool, which resulted from an enema given on Oct. 20th. In the evening the temperature rose to 101·6° with pulse of 100, but in the morning of the 21st it fell to normal again with pulse-rate 80 and respirations 24. During the next three days, though there was nothing alarming in the pulse and temperature, her condition became worse. She had a bad colour and the pain became so bad that morphia was given to relieve it on the 24th, when operative interference was suggested. As her condition was much worse on the 25th she agreed to an operation. The left upper rectus was rigid and very sensitive to touch or pressure. There was some general tenderness over the abdomen and some distension. The abdominal pain was very marked, but it was most acute under the left upper rectus. The respirations had risen to 46.

Laparotomy was performed on Oct. 25th. As the bulk of the pain and tenderness was on the left side, a paramedian incision was made through the left rectus. There was no sign of any damage to the abdominal wall. On opening the peritoneal cavity a little free turbid fluid was noted, but there was no escape of gas or marked odour. Two or three small areas of fat necrosis were seen close to the stomach, which was undamaged. The pancreas was found to be swollen with recent adhesions at its head. To obtain more easy access to the head of the pancreas and the gall-bladder a transverse incision was made across the middle line and through the right rectus, above the umbilicus from the middle of the primary incision. The gall-bladder was tense and somewhat hidden by recent adhesions. On gently freeing the gall-bladder with swabs pus was seen to ooze up from the direction of the head of the pancreas. The gall-bladder was freed from its adhesions and pus removed with swabs. A rubber tube was sewn into the gall-bladder, a corrugated rubber and gauze drain to the head of the pancreas, and drainage-tubes to the right kidney pouch and Douglas's pouch were inserted. The primary incision was sutured and all four drains concentrated in the middle of the second incision. After the operation she was in a state of great collapse with feeble pulse of 120, sighing respiration, and bad colour. Camphor and ether were administered subcutaneously and four-hourly rectal salines.

The next day, Oct. 26th, as her condition still remained very serious, five units of insulin were ordered twice daily, with glucose added to the salines. On the 27th her condition improved slightly, but she had tympanites, which was much relieved by a turpentine enema, which was followed by a loose, copious stool. On the 28th the drainage-tube to Douglas's pouch and the right kidney pouch were removed and as hiccup appeared eserine gr. 1/100 was given four-hourly. On the 29th she was much improved, so eserine was discontinued; but as the improvement disappeared eserine was again given.

During the subsequent period there was a free discharge of pus from the drain to the pancreas and the tube in the gall-bladder which at first discharged pure bile, then discharged bile mixed with pus and, later, almost pure pus. The skin round the drain was protected with zinc ointment and did not suffer from irritation as in the case reported by Delatour.[4] Her condition was curiously dependent upon the administration of eserine. When this was discontinued she rapidly became much worse, the pulse became feebler, though the rate did not increase much, her colour became bad and she had marked depression and lethargy. Simple enemata were given every alternate day with invariably good results.

On Nov. 5th the stitches were removed. On the 16th the tube from the gall-bladder and the drain from the head of the pancreas were removed, but bile and pus mixed continued to discharge from the sinus in gradually decreasing amount. As rectal salines were discontinued glucose w given by the mouth. From Nov. 26th her condition steadi improved, with colour returning to her cheeks.

General massage was instituted to improve her muscul tone and general metabolism on Dec. 7th. On the 16t the amount of insulin was reduced to five units once a d before the midday meal and this was discontinued the 22nd. On the 13th she had been allowed to sit in chair, and day by day she was given further opportuni for exercise in walking about the ward, and rapidly improve The bowels acted normally without enemata from Dec. 27 onwards. She was discharged from hospital on Jan. 7t 1928, with a perfectly healed scar and no sign of sk irritation around it. She stayed in the town a few da and then returned by easy stages of one day's travelling far-off Stornoway. Nearly a month later she wrote a stated that she had continued to improve after reachi her home and was rapidly regaining her strength.

The only similar case of which we can find a record the one of Delatour,[4] but there are many poin of difference. They agree in the age and incide and amount of shock after operation and pain exhibition of food. They differ in the amount initial shock, irritation of skin by discharge fro drainage-tubes, and subsequent formation of a cys

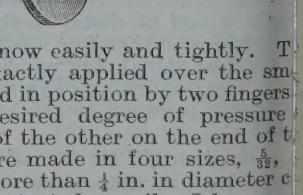
The points to be noted in this case are: (1) T injury was not caused by a direct blow, but by sliding squeeze, producing a shearing effect on limited portion of the abdomen with no local mar on the skin. (2) The severity of the immedia shock differing from the cases reported by Wari and Delatour, and we suggest that this may have be due to direct irritation of the solar plexus. (3) T tardy development of the symptoms directly d to the pancreatic lesion. (4) The free discharge pus from the gall-bladder drain. (5) The exhibiti of insulin on the theory of rest and regeneration the pancreas and to assist in the absorption a utilisation of glucose, the most easily administer nutriment. (6) The most ready and constant respon to hypodermic injections of eserine when su generally accepted remedies as strychnine, camph and ether and brandy were of no avail. (7) Despi the use of four separate drains and a discharge ther from lasting some five weeks, there was a very sou abdominal wound, and as the bulk of this is above t umbilicus the risk of subsequent hernia is almo negligible. (8) There was no sign of any cy formation.

[4] Delatour, H. Beecham: Annals of Surgery, October, 1921.

New Inventions.

A CARBONIC ACID SNOW APPLICATOR.

In the application of carbonic acid snow warts, moles, and small nævi the protection of t surrounding skin always presents a difficulty. T pressure of the snow pencil creates a temporary crat the sides of which are inevitably frozen and blister so that the consequent scar is larger than desirab Moreover, it is not easy to apply it exactly to t tumour. To obviate these drawbacks I have had made to my design the applicator here illustrated. It consists of a circle of plate glass 2 in. in diameter, with an axial tube projecting 1 in. on one side, $\frac{1}{16}$ on the other. A solid glass rod to each packs the snow easily and tightly. T lumen of the tube is exactly applied over the sm tumour and the plate held in position by two fingers one hand, while the desired degree of pressure maintained by a finger of the other on the end of t rod. The applicators are made in four sizes, $\frac{5}{32}$, $\frac{7}{32}$, and $\frac{1}{4}$ in. Nævi of more than $\frac{1}{4}$ in. in diameter c be treated with an unprotected pencil. I have us them with the greatest satisfaction both in priv and in hospital practice. The intense cold does crack or even chip the glass.



T. B. Sellors, M.D. Durh.

Medical Societies.

FEDERATION OF MEDICAL AND ALLIED SERVICES:

COUNCIL OF INDUSTRIAL MEDICINE.

THIS Council met on March 2nd under the chairmanship of Dr. D. A. COLES to discuss Industrial Accidents and Rheumatism. The Chairman explained that the Council's objects were to gather all the available knowledge and place it at the disposal of employers of labour with a view to reducing the great economic loss and human suffering caused by accident and disease. The International Congress for Industrial Accidents and Diseases, of which the Council was the authorised English Committee, would meet this year in Budapest.

Industrial Accidents.

Prof. E. L. COLLIS set out the advantages of treatment at a works clinic in saving both time and compensation costs. Whereas the ordinary surgeon dealt only with wound healing, the industrial doctor was skilled in the restoration of specialised function. The panel doctor to whom an injured workman was sent had either to imperil the healing of a wound by taking down the dressings, or to make himself responsible for a wound of which he knew nothing, and which might include cut tendons or nerves. The works doctor could prescribe suitable half-time work, and administer that sovereign remedy, "a hair of the dog," at a much earlier stage than the panel doctor. A clinic which organised treatment from first-aid to care saved literally half a firm's compensation charges.

Sir PERCIVAL WILKINSON said that the object of the Order of St. John was to get as many men and women trained in first-aid as possible in all the pits, factories, and industries of the country. The "responsible person" whom the Factory Acts required to be in charge of a first-aid room should be properly defined by any new legislation, and his qualifications ensured by inspection; there should be a first-aid supervisor for each big floor and each building. In the best-run pits there was an organisation on every level and for every shift. There was an average of 62,000 accidents a year on each of the four main railways, and one of the most up-to-date Doncaster pits treated 80 accidents a year at pit-head.

Dr. DRUMMOND SHIELS spoke of the efficiency of the first-aid work on the railways, and the praiseworthy way in which the directors encouraged it, and Dr. SALISBURY SHARPE described the system on the Great Western Railway by which 10 per cent. of the men were trained in first-aid and their skill maintained by yearly courses.

Dr. ALFRED SALTER stated that in his work as medical officer to three trade-unions he found a constant source of difficulty in directing injured men to places where they could obtain after-treatment for, say, traumatic arthritis. A certain amount of massage, radiant heat, and the like was available at the London hospitals, but the enormous industrial dormitories on the fringe of London remained unprovided for, and unless the patient travelled up every day it was almost impossible to find treatment. This was often physically or financially impracticable. The result was that patients who might have been at work six weeks after an accident went on drawing compensation for months or years. The remedy he suggested was the establishment of central district and local clinics financed by a levy on the companies insuring against industrial accidents. Another great difficulty was that of finding light work by which a convalescent could be rehabilitated, and he saw no solution but the provision of gymnastics at these suggested industrial clinics.

Mr. HENRY LESSER, President of the National Federation of Employees' Approved Societies, extolled the system whereby in some large works a "jury" of representatives of the men and management sat to inquire into the cause of every accident that took place and to suggest means for preventing its repetition.

Mr. MAURICE SALMON, of Lyons', and Mr. C. R. PITT, of Debenhams', testified to the value of a clinic in a large factory and a department store respectively.

Dr. N. HOWARD MUMMERY compared the respective efficacy of the treatment of accidents at the factory, in hospital, and by private and panel doctors, in favour of the first method. In his own clinic, serving a factory staff of 6200, the records for the three months ending February, 1928, showed 2909 new injuries of all kinds. In only 179, just over 6 per cent., was any working time lost. 4716 out of 5060 redressings were done during continuous employment. The saving of working time and compensation was enormous.

Industrial Rheumatism.

Dr. FORTESCUE FOX said that the campaign against rheumatic diseases was now international. Their investigation and treatment presented big problems, and he would despair of success unless the many interests concerned—medical, official, industrial, and social—gave support to the Red Cross Society's effort to found a demonstration clinic in London. Among its other functions this clinic would deal with early cases which were at present left untreated, and it would also aim at ameliorating cases which were now regarded as incurable, thus preserving the usefulness and earning capacity of large numbers of workers.

Mr. LESSER bore witness to the effectiveness of continental clinics for the out-patient treatment of rheumatism. Statistics compiled by the insurance societies and employers showed that men returned to work much sooner than formerly. The clinics which the British Red Cross was proposing to set up would prove a boon to thousands of sufferers from this disease.

Dr. M. B. RAY dealt with the actual methods by which rheumatic diseases—he used the plural advisedly—should be treated. These complaints were profoundly influenced by climatic and environmental changes, and some people were more liable to them than others. The only possible inference was that the tendency was congenital. It had been found that the skin of rheumatically inclined persons was an insufficient protection against cold and damp, and although other causes, such as septic foci, played their part, the skin was the organ chiefly at fault in the production of these diseases. They occurred in certain persons who did not react favourably to their surroundings, and no organ was concerned so closely with the environment as the skin. Treatment should therefore be directed towards improving the activity of that organ, and should consist of hydrotherapy, manipulation, and exercise, in combination with heat, light, and electrical therapy. Up to the present time no concerted effort had been made to deal with this large body of sickness. Hospitals and spas could only deal with suitable cases who could travel to them. The British Red Cross Society proposed to bring the treatment to the patients, by establishing clinics accessible at all times in which patients could be treated after their working hours. Sufficient progress had already been made to start a demonstration clinic.

Dr. R. LL. J. LLEWELLYN said that he had been treating skins for 30 years and agreed with Dr. Ray's estimate of their importance. People were often asked how their bowels acted, but never how their skin acted, though it was equally important. In the prevention of rheumatism the care of the skin was the beginning of wisdom. It ought to be possible, and he thought it was possible, to "spot" potential rheumatic subjects, and these were the people towards whom preventive measures should be directed. It was useless to talk about preventing a disease that was already there. These subjects should be studied, not from the pathological, but from the physiological point of view, bearing in mind that the skin and the mucous membranes were the danger spots. The skin and the muscles were bound up reciprocally, and should interact with due balance.

ROYAL SOCIETY OF MEDICINE.

SECTIONS OF ANÆSTHETICS AND OBSTETRICS.

AT a combined meeting of these Sections on March 2nd Dr. CECIL HUGHES, President of the Section of Anæsthetics, in the chair, there was a discussion on

ANÆSTHESIA IN OBSTETRICS.

Mr. EARDLEY HOLLAND said that professional anæsthetists were now beginning to take an interest in the administration of anæsthetics in obstetrics, a branch which they had hitherto much neglected. The method used for this work, if it was to be generally adopted, must be simple and safe, and capable of being employed by those who had not had special training. It was necessary in this work that pain should be abolished, or materially diminished, over long periods of time, and the form of anæsthesia used must not lessen the force and frequency of the uterine contractions, nor endanger the life of the fœtus. Anæsthetics were used for two distinct purposes in this specialty: (1) to relieve the pain of labour; and (2) for obstetric operations, such as version and Cæsarean section. For the second purpose the most suitable anæsthetic was that which was best for operations in general; deep and prolonged ether anæsthesia, however, was undesirable for the fœtus, which was also very sensitive to morphia. This drug should not be given within two hours of delivery. He thought highly of stovaine, certainly for Cæsarean section, which it made almost bloodless.

Reverting to the relief of pain in ordinary or normal labour, Mr. Eardley Holland declared that every woman ought to be saved the pains of labour. The statement of the whole question by Simpson 81 years ago had not been improved upon since, and the only subsequent advance had been the Junker inhaler. If practising midwives could not alleviate the pains of labour, 75 per cent. of women must go on suffering in labour in this country, as that proportion were attended at the present time by midwives. This inability to relieve the pain of the mother was the great bar to the advancement of the midwife. He did not see any objection to midwives giving analgesic drugs, such as chloral and morphia. The anæsthetic requirements of the first stage of labour were different from those of the second stage. In the latter, especially in primiparæ, the pain was very severe. The pain in the first stage could easily be made tolerable by such drugs as chloral, or morphine and hyoscine together; but in the second stage a general anæsthetic was usually needed. Emotional conditions heightened the intensity of the pain, and the apprehensive state engendered by conversation about the perils of childbirth made it desirable to try to restore their confidence in the last months of pregnancy. The method of common use for anæsthetising these women was that of intermittent chloroform anæsthesia. This should not be given until the second stage had begun—certainly not until the first stage was nearing its end. As soon as it was evident that the pain of the uterine contractions was not being well borne, grs. 30 of chloral should be given or an injection of morphia and hyoscine. This, with a repetition of the hyoscine, carried the patient, with very little pain, on to the second stage of labour. At the onset of the second stage, chloroform was given by the Junker inhaler. This was not, he contended, sufficiently taught to medical students. The anæsthesia must not be deep enough to interrupt the uterine contractions. Under light anæsthesia, powerful bearing-down efforts were associated with perfect relaxation of the pelvic floor. There should be a deepening of the anæsthesia for the most painful part of the process of birth, when the head passed through the vulval orifice.

Dr. JOSEPH BLOMFIELD said the obstetrician tolerated, in labour, a condition of affairs—i.e., absence of anæsthesia—which he would not allow in any other surgical connexion. Even when an anæsthetic was used it was often left until too late, and was n skilfully administered. Every woman in labour shou be free from pain from first to last. The absence the anæsthetist from such a large proportion of the cases was simply due to the fact that he had not be asked to coöperate. In certain cases nitrous oxi and oxygen was the ideal anæsthetic, but it must administered by somebody familiar with the apparatu and generally home conditions were not very suitab for it. For some it was an inefficient anæsthetic, a these women would only become excited with it. H agreed with Mr. Eardley Holland that the anæsthet for general use was chloroform, as it was almo invariably successful. He had not had experience the synergistic method, which was advocated and us in the United States—namely, the use of morphia a magnesium sulphate, followed by ether and quinine p rectum. He had found that ethyl chloride was a ve useful drug when the pains began, and its effect cou be reinforced by very weak chloroform.

Mr. WILLIAM GILLIATT agreed that certainly wh the doctor was working with single-handed assistan chloroform was the favourite anæsthetic. Eth seemed to diminish the strength of the uteri contractions and so delayed the birth of the chil Not only had the woman in labour the right to saved pain, but the obstetrician preferred that t woman should be lying still, for then it was easi to keep the operation aseptic. Chloroform was mo potent and acted more quickly than ether; but ga and-oxygen, with the addition of a little ether, was be during the passage of the child's head. It stimulat rather than checked the uterine contractions and a vomiting was but slight. There was some danger chloroform poisoning if that anæsthetic were use and if any toxæmia was already present that dr might increase it. The danger of trouble was increas if the patient were given more than one kind anæsthetic for the labour and a complication. He ga details of five serious cases, two of which end fatally, one in 36 hours, the other in 15 hours. Wh spinal anæsthesia was used for a patient for wh inhalation would be dangerous, no inhalation shou be given at the same time. In his maternity wards now used ether.

Dr. H. A. RICHARDS said the choice of the anæsthe should depend on the state of the particular patie He agreed that if a patient had previously been giv an anæsthetic no subsequent anæsthetic shou contain chloroform. For a second anæsthetisati gr. 1/100 atropine should be given half an h beforehand, then ether. If the patient was accustom to being violently sick, nitrous oxide and oxygen shou be used when she seemed to be unduly apprehensi of pain. For Cæsarean section it was best not to g any chloroform at all. Twilight sleep did not co into the range of the discussion, as it was not anæsthetic. His objection to using ethylene in priva practice was that there was usually a fire in the roo and it was a very explosive substance.

Mr. H. E. G. BOYLE spoke highly of the skil administration of gas-and-oxygen by Dr. Wes Bourne at Montreal; from this he had gained t impression that it was one of the finest of all an thetics. After obtaining the patient's confidence could produce by this mixture a condition of analge in which the patient would do just what she was ask to. Certainly it did not diminish the propuls efforts of the uterus. When the woman bore do well it shortened the duration of the labour. Eth could be used just when the head was being bo and then a mixture of CO_2 and oxygen could be giv for a few minutes. He would like to see gas-an oxygen more used in obstetric practice in this count

Dr. H. BECKETT-OVERY said he did not kn whether specialists appreciated how much so patients suffered after their confinement—sometim for months or years after delivery. Even after uncomplicated confinement some women suffe severely from shock, and if it could be shown th there was a general anæsthetic which was available all purposes, it was, he considered, the docto

ounden duty to use it. In the case of women whose s was dilating rapidly he at once gave hyoscine and iorphine, a measure which seemed to quieten the motions, so that by the time the second stage was eached the patient was able to use the chloroform erself. He hoped that the old attitude that it was ot necessary to use an anæsthetic for women in abour had now passed from the profession for good. n quite 70 per cent. of the cases he did not think a mall quantity of an analgesic drug brought about any ppreciable delay in the birth process, and it was a onsiderable gain to the patient, as the head could e delivered without any laceration.

Dr. S. A. S. MALKIN (Nottingham) spoke of the ynergistic method—i.e., administration of morphia nd magnesium sulphate, followed by the rectal nstillation of ether and quinine in olive oil. The merican view of it was that only a small dose of iorphia was given and that the magnesium sulphate ept the action more effective and over a longer time. he quantity of ether needed was also small, and it as said that the administration could be rendered so utomatic that the constant attention of the obstet- ician was not required. He had used the method in) cases, of which 12 were entirely successful—i.e., ie patient slept between the pains and stirred only ith the pains. In some cases the woman had not nown when the child was born. In one case there as excitement, in two the method failed completely, one he gave the morphia rather late, the second age supervened quicker than he expected, and the ild was born blue. Now that he was better quainted with the technique he felt certain of curing a large percentage of successful cases with ie method, which, he was convinced, possessed dvantages.

SECTION OF ORTHOPÆDICS.

A MEETING of this Section was held on March 6th, r. W. ROWLEY BRISTOW, the President, in the air, when Mr. HARRY PLATT read a paper on the

TREATMENT OF ACUTE OSTEOMYELITIS.

he literature, he said, offered conflicting advice, ually based on very small series of cases collected er very long periods. The outstanding contribu- on to the subject in the last decade had been made Clarence Stau, of Toronto, who had recorded 7 cases at the Children's Hospital during 12 years. he greatest mortality occurred in the age-group –15, and was twice as great in males as females. Mr. att's series at Ancoats Hospital, Manchester, mbered 41 in five years. He then outlined the atomy of the blood-supply of growing and adult nes on which the infective process depended. he acute osteomyelitic process began in the meta- yseal cancellous tissue just under the epiphyseal sc, because of the "end-artery" system and ggish blood-supply. The focus rarely spread to the joint, but more often to the subperiosteal ace and thence along the surface of the shaft. he "gutter" operation had been based on the roneous belief that spread occurred early along e medullary canal. The Toronto school had shown at the cancellous tissue of the metaphysis offered nsiderable opposition to the spread of infection, d that the juxta-epiphyseal focus remained small d localised when the periosteum was extensively ripped. The medullary canal was invaded late, d through the Haversian canals from the sub- riosteal space. This fact had been established by e most convincing experimental, clinical, operative, d post-mortem observations in Toronto, and Mr. att had confirmed it in his own series. In older ildren there might be atypical localisation, especially the radius and ulna, and occasionally in the fibula, e infection reaching the bone by the nutrient artery d spreading up and down the medullary canal.

Early and Differential Diagnosis.

There were two main clinical groups: those in om local and constitutional signs appeared abruptly after two or three days prodromal period, a phase which might indeed almost be non-existent, and those in whom the prodromal stage lasted three or four weeks with important localising signs which all too often passed unnoticed. During the prodromal stage a tiny juxta-epiphyseal focus was smouldering. The signs were fixed pain at the end of a long bone and metaphyseal tenderness, which might be accompanied by intermittent limp and general seediness. In these cases diagnosis should be increasingly possible in the future, if the significance of the localising signs were more widely appreciated. In the next phase the signs became more insistent and bony swelling was added to them; the juxta-epiphyseal focus was just reaching the periosteal space. Unfortunately, this was often taken for some other acute infection, usually rheumatism. Yet there was a marked distinction between the joint pain, tenderness and muscular spasm of rheumatism, and the painful, thickened, tender metaphysis. It was important to decide whether indeed there was such a thing as acute monarticular rheumatism, and, if so, how common it was, in order that students might be taught to think first of acute osteomyelitis. An early exploratory puncture was a minor operation which did no harm if the diagnosis were not confirmed, and might save many lives and limbs. Special diagnostic difficulties and high mortality were presented by osteomyelitis of the flat and hidden bones. In the pelvis the ilium was usually affected, and there was early extra-osseous spread and large intermuscular abscess, or the infection might spread widely in the diplöe. Pain and tenderness might be absent or inconspicuous, and the condition should be suspected in any acute toxæmia without localising signs. There might be referred pain down the thigh, pelvic tenderness, or a sense of resistance between the trochanter and the iliac crest. Mr. Platt urged exploratory puncture without delay in every suspicious case.

Treatment.

The principles governing treatment were: (1) early and efficient drainage and early sterilisation of the wound; (2) avoidance of further devascularisation of infected and uninfected bone, and infection must not be introduced into uninfected areas during operation; (3) systemic infection must be combated by all forms of general and specific treatment, such as immune transfusion and intravenous antiseptic medication.

Operations could be regarded in terms of drainage. Subperiosteal and metaphyseal drainage in the early stages gave excellent results. Subperiosteal drainage alone was usually insufficient, and could only be regarded as a minor procedure of urgency in patients who were too ill for anything else. The cavity should be lightly sponged out, but no curettage should be done. Of Mr. Platt's 41 cases, 22 had been treated in this way and 14 had healed without sequestration. There was no justification for the "gutter" extension, which should be condemned as futile and dangerous. The gutter operation, or diaphyseal drainage, had its indications when the medullary canal and cancellous tissue were widely affected, as when the process had started in the centre of the shaft or in neglected cases of primary metaphyseal infection. Of the four cases so treated by Mr. Platt one had died and two had had extensive necrosis and chronic suppuration. On the subject of subperiosteal resection of the diaphysis Mr. Platt's mind was "open and to let." The procedure must compete satisfactorily with conservative operations if it was to be accepted. In theory it was better than the gutter operation for neglected cases when the shaft was riddled with infection.

Primary Resection.

Mr. ALEXANDER MITCHELL spoke of the importance of blood culture on admission. Simple incision was universally disastrous, except in the mild type of pneumococcal osteomyelitis. In an early case of septic osteomyelitis of a long bone he had found that

removal of a piece of the cortex for drainage gave a good intermediate, and in most cases a good end-result. Resection in subperiosteal infection had not received the attention it deserved. Extensive resection of the humerus, tibia, or femur was not, however, very satisfactory. His practice of resecting the whole length of an infected shaft must be regarded as an alternative to amputation. In 90 per cent. of cases, with careful after-treatment by extension and early muscle exercise, a good result would be ensured. It was very important to get the tibialis anticus, or interior muscles of the leg, to act early. Plaster or tight splints were almost sure to prevent regeneration, but if the limb were kept in a Thomas splint with a certain amount of extension, but not fixed in such a way as to prevent voluntary movement, regeneration was almost sure to follow. Two days after operation the packing should be removed and a periosteal suture done, except for a gap at each end for drainage-tubes. The bone should then be treated with eusol or flavine. Another argument against resection was the high mortality, but in a series of 70 cases treated during the last five years primary resection had been performed 13 times with only one death, a patient with active septicæmia. The total number of deaths was ten. The risk of removing a large sequestrum was much greater than that of a primary resection. Subperiosteal resection was not a routine treatment, but it had a place, and suitable cases could be recognised by the experienced surgeon. He had not seen any good follow blood transfusion in acute osteomyelitis. He had never seen a case in private practice, although he would expect the hospital child to be less liable to bone infection. He strongly agreed with the importance of impressing upon students the gravity of the disease and the need for early diagnosis, particularly of making a routine examination of the ends of the long bones in children with an unexplained rise of temperature.

Mr. ERIC LLOYD described a series of 29 cases from Ormond-street Hospital, all of which had been under his personal care. The *Staphylococcus aureus* was the cause in a very high proportion (19 cases) and was much more lethal than the streptococcus. Only one was due to the pneumococcus. Eleven had died. The lower limbs were involved far more often than the upper. None of the cases gave negative blood culture, and there was a high incidence of cardiac complications: pericarditis, pyopericardium, and ulcerative endocarditis. Treatment should be something between the "gutter" operation and the periosteal incision, leaving only a portion of the circumference to act as a splint. The pendulum had, perhaps, swung a little too far away from amputation. Blood transfusion and intravenous medication had been tried, without striking results. Some of the streptococcal cases seemed to make a remarkable recovery however they were treated, while some of the staphylococcal ones made no effort in spite of every kind of help. Diaphyseal excision had not been generally practised recently.

Mr. W. H. OGILVIE showed the records of 51 cases from Guy's Hospital from 1922–26. Acute osteomyelitis was one of the decreasing diseases. The preponderance of male cases was great, but varied in different localities. Sixty-eight per cent. of cases were between the ages of 8 and 15. The upper end of the tibia showed the greatest incidence, followed by the lower end of femur, lower end of tibia, and upper end of humerus. The mortality was 21 per cent., and 51 per cent. were discharged unhealed. Amputations accounted for 8 per cent., and 16 per cent. were sent out healed. There had been three cases of disease of the ilium, of whom one had died; the mortality from infection of the femur was low, because signs were earlier in that region. The series showed favourable results from radical ("gutter") operation. The mortality was not so much a question of treatment as of the virulence of the disease, which varied enormously. The average time between the onset of symptoms and admission was 7·4 days. The difference between the adult and childish type was shown strongly; in the adult the infection wa apt to be latent, the symptoms less severe, and th course much more favourable and quieter. Th average time in hospital was three months. Ninety two per cent. of the organisms were *Staphylococcu aureus*, admittedly the specific organism of oste myelitis in London; the Edinburgh figures differe from those of other centres. Joints were very frequentl affected, but this was more a feature of pyæmia tha of osteomyelitis as such. In severe cases the hea and pericardium were often attacked. It wa impossible by clinical means to tell the amount present or future necrosis, what bone was healthy and what would survive, and where resection shoul stop. Bone death was always liable to appear a the edge of the operative interference. Operatio should take into consideration the future proble of repair as well as the immediate problem of infectio All bone which did not die was a potential source bone cells, and wide resection might be harmfu He condemned diaphysectomy. Infection in th early stage was mild, and only dangerous becaus it was in an enclosed space and the blood-vesse were sinusoids through which pus easily passe into the circulation. Therefore the drainage oper tion should lay open only the area infected. Th usual operation produced an extensive wound wit painful dressings and protracted healing, leavin a wide scar adherent to bone and always liable t break down. To avoid this Mr. Ogilvie operate through a flap so that the skin scar did not overl the bone scar; he removed compact bone for th whole extent of pus formation and at least one-thir of the circumference. He left the medullary cavit alone, save for removing loose portions, and inserte a series of Carrel tubes without packing. The sk was then closed with interrupted silkworm sutur about an inch apart. This method had all th advantages of the open and the closed operatio He did not believe in radical secondary operation which only produced temporary relief. Operatio was only justified for abscess or sequestrum. H preferred to insert a silver wire down to the bon keeping it in place with strapping. The patient cou remove this daily. There was very little discharg and it stopped the tension in the deeper parts an abolished the intermittent bouts of fever. Transfusio was no use in acute sepsis.

Mr. N. DUNN described a case of osteomyelitis the spine, and Mr. ALAN PERRY described his expe ence at the London Hospital, where 75 per cent. cases gave a positive blood culture. He regarded th cases as pyæmic from the beginning rather than localised foci. Diaphyseal excision had been failure in his hands, yielding no regeneration in mo cases.

ROYAL MEDICO-PSYCHOLOGICAL ASSOCIATION.

A QUARTERLY meeting of this Association w held at the City Mental Hospital, Fishponds, Brist on Feb. 16th, Dr. HAMILTON MARR, the Presider being in the chair. A paper dealing with son points in the

Histology of the Globus Pallidus.

was read by Dr. E. BARTON WHITE. He said that amo the changes in the globus pallidus in various diseas several authors referred to striking changes in t walls of the blood-vessels of that body, manifest as a deposit of an amorphous material in their out walls, often sufficient in amount to obliterate t muscular and elastic fibres. It looked like calcific tion. Half the hundred cases examined by West Hurst at the National Hospital, Queen-square, show this change in the vessels, sharply limited to t anterior half of the globus pallidus. The ages of t patients ranged from 20 to 81. Hurst found that t material was not calcium, but a large portion of

was easily stainable iron. The material was also found lying free in the corpus striatum. Hurst considered that the deposit did not represent a senile change, and that it was not related to arterio-sclerosis, and in some of the cases he could find no pathological change in the nerve-cells of that nucleus. These deposits seemed to show, in Hurst's view, a proclivity of the globus pallidus to degenerate in the second half of life. Dr. G. Hadfield had shown that acute bilateral necrosis might affect the part of the globus pallidus in which the vascular change was found, and that a rich deposit of iron salts was present in the walls of the vessels of the pallidus in half the persons examined who had no chronic nervous disease, their ages being over 30. Dr. White's own figures corresponded with these. He submitted, as his conclusion, that the deposition demonstrated was as frequent in all forms of mental disorder as in chronic neurological cases and as in normal brains, and that, therefore, it could not be regarded as pathognomonic of any particular nervous disease, as some had previously contended.

Dr. GEOFFREY HADFIELD said the deposit spoken of was not a minute microscopical quantity, but could be easily made out with the aid of a hand lens. Many had concluded that the change in the vessels was pathological and that it caused, or largely contributed to, neurological signs and symptoms; it had, for instance, been put forward as a cause of post-encephalitic Parkinsonism, also as playing a large part in the causation of paralysis agitans. The change must be related to the fact that the globus pallidus was very rich in iron salts, as could be readily seen by putting a slice of brain into ferrocyanide of potash and hydrochloric acid, when it rapidly became a deep blue. An investigation led him to the conclusion that the iron which appeared in the vessel wall came from the nucleus itself—i.e., it was intrinsic iron—and he also considered that it was derived from a precursor in the nucleus which did not stain. The site of the deposit in the nucleus strongly suggested that the process was actually a degenerative one. It was, he said, tempting to think that perhaps the globus pallidus was a vestigial structure, which was undergoing evolutionary atrophy. There seemed to be no specific association with diseases. It was possible that this deposition of iron might predispose to disease; it certainly would alter the permeability of the vessels. The condition always seemed to be present in children, but in old people it was frequently found.

Prof. EDWARD FAWCETT said he was unable to throw any light on the subject of this paper. He agreed that the globus pallidus was one of the oldest parts of the encephalon. Dr. Hadfield's suggestion that it was a degenerative process which resulted in these depositions seemed fairly sound.

Dr. J. R. LORD spoke of the importance to psychiatrists of the basal ganglions as probably the seat of the central nervous mechanism of the emotions. Dr. John Brander at Bexley had investigated the presence in the brain of iron in cases of general paralysis, and had discovered that it was present in great quantities. He understood, however, that Dr. White had not arrived at the same conclusion. The presence of the iron in the globus pallidus, he thought, might indicate a regression of function, and that indeed the structure was a dying one. The extent of regression would vary in individuals.

Dr. G. E. PEACHELL asked whether Dr. White had investigated the brain of a patient who died of pernicious anæmia, and, if so, whether iron was found in that case. Also whether there was any analogy between the reaction which was found in the globus and the staining and pigmentation found in the brain after hæmorrhage.

Dr. WHITE, in reply, said that in one case of four having of general paralysis there was certainly no iron deposited.

Dr. HADFIELD, in reply, said he had not examined any cases of pernicious anæmia, but in that disease the pigment was taken out of the blood by a phagocyte. In the cases which had been examined there was no reason to suppose there was any excess of iron in the circulating blood. Neither was there excess of iron in the pathological series as opposed to the normal. He believed the deposition took place apart from any phagocytic cell action. And he thought hæmorrhage could be eliminated as a cause of the pigmentation or the change in the globus pallidus, as in the majority of these cases there was no sign of a pathological lesion.

Dr. CAREY COOMBS read a paper on the

Mental State in Cardiac Disease.

He said he had reviewed about 2000 cases of cardiac disease, and from them he had drawn certain inferences as to the connexion between such disease and mental disorder. His ideas he put in the form of answers to the following three questions: (1) Is there evidence that mental disorder causes cardiac disease? (2) Do the circulatory disturbances arising from cardiac disease often upset the mental functions? (3) How far are both cardiac disease and mental disorder, when they occur together, due to a common cause? In the war mental disturbance was often the chief factor in causing functional tachycardia; and mental stress and worry were appreciable factors in producing high arterial tension. He did not believe there was any form of heart disease which arose out of mental disorder. With regard to whether cardiac disease could be directly responsible for mental disorder, he had been struck by the absence of unimpeachable evidence in support of such a view. Still, severe cardiac disease was so terrible to contemplate that it might well upset the mental equilibrium of the person concerned, and also the deficiency in the cerebral circulation might result in mental trouble. It was rare to find insanity as a sequel of rheumatic heart disease. The incidence of insanity in uncomplicated heart disease was not higher than that of insanity in the general population. There were some conditions in which mental and cardiac symptoms appeared together, and might be ascribed to a common cause. In persons with senile heart disease, for example, the failure of the heart to supply blood adequately to the periphery was only one of many straws whose combined effect was to break the camel's back.

The PRESIDENT thought there would be general agreement that heart disease per se seldom caused mental disorder; and that when mental disorder followed heart disease it could usually be ascribed not to heart conditions but to the circumstances which brought about the diseased state—i.e., the autotoxic or microbic effect on the blood. With regard to cardiac conditions affecting the mind, it was usually the mental condition which caused the functional aberration; that was certainly so in many of the cases of shell-shock during the war; the cardiac condition usually came on after mental exhaustion.

Dr. LORD agreed with the President's remarks. The action of the heart was very much involved in the psychoneuroses and the neuroses. Insanity was so closely associated with the toxæmias that it was difficult, in a given case of acute insanity, to decide whether the cardiac condition was due to the mental state or to the accompanying toxæmia.

MEDICAL SOCIETY FOR THE STUDY OF VENEREAL DISEASES.

AT a meeting of this Society held on Feb. 24th, with Colonel L. W. HARRISON in the chair, two papers were read on the

Treatment of Gonorrhœa in Pregnancy and in the Puerperium.

Dr. MARGARET RORKE dealt with *antenatal treatment*. She said it was now a matter of course for every upper middle-class woman in London to visit her doctor, not once but many times, for examination and advice

during pregnancy, whilst free antenatal clinics were now popular with the wife of the wage-earner, who took it for granted that she should undergo careful examination during this period. The change in public opinion during the last 10 or 12 years was astonishing. This being so, it was natural that as time went on the standard examination of the expectant mother should be more exacting. In most of the modern antenatal clinics almost any discharge occurring in pregnancy was investigated at once by the venereal diseases department, but there were five or six types of discharge commonly seen in addition to true gonorrhœa. Of these a discharge attributable to *Bacillus coli* infection was the commonest, and possibly it was more dangerous in its end-results than gonorrhœa itself. No patient, said Dr. Rorke, required more careful handling than the pregnant woman with gonorrhœal infection. If she was unmarried and deserted, a sense of utter helplessness overcame her; if she was married and realised that she was the victim of her husband's infidelity she suffered from wounded pride and bitter resentment. A correct understanding of the woman's psychology was very important to effective treatment. The first step was to have one, and if necessary more than one, Wassermann test carried out to ensure that she had not got syphilis as well as gonorrhœa. In all acute cases the patient ought to be immobilised by rest in bed, and the need for complete evacuation of the bowels, daily or twice daily during pregnancy, and of strict cleanliness, including the daily bath or wash down, should be impressed upon her. After instancing the various methods of treating the condition, Dr. Rorke referred to the value of diathermy where there was persistent infection of the urethra; it was useful to clear up the urethra in a patient awaiting delivery. The conditions to be aimed at were that there should be no ophthalmia neonatorum in the child, that the mother's pelvis in the puerperium should be in as good condition as that of a non-infected mother who had had the same type of delivery; and that complete cure of the infection should be brought about by continued treatment and supervision.

Prof. LOUISE MCILROY gave an outline of the working of the system of coöperation between the obstetrical unit and the venereal diseases department at the Royal Free Hospital. During labour vaginal examinations and operative interference were to be avoided as much as possible. Lacerations of the vaginal walls and cervix were the commonest cause of puerperal sepsis. During the third stage of labour the uterus should not be massaged unless hæmorrhage occurred, as sepsis might extend upwards from the membranes in contact with the vaginal secretion. Pyrexia in the puerperium occurred more often in gonorrhœal than in non-infected cases. Acute sepsis did not occur unless pyogenic organisms followed in the track of the gonococci. In the treatment of septic conditions free drainage of the uterus was essential and exploration of the cavity was only to be carried out if retention of portions of the placenta was suspected. Intra-uterine douching should not be permitted and patients should be kept in the open air as much as possible. Antistreptococcal serum was beneficial and, where extension of sepsis had taken place, intramuscular injections of quinine had value. She concluded by showing some tables of 322 cases treated at the Royal Free Hospital and gave full details of the deliveries and the puerperium. There was spontaneous labour with normal puerperium in 197 cases, and in the whole series there was not a single maternal death. It was interesting to note what happened to 34 infants whose mothers had combined infection of syphilis and gonorrhœa. Of these children 24 were satisfactory after spontaneous deliveries, 5 had ophthalmia neonatorum, 1 was stillborn, 2 were macerated, and 2 died shortly after birth.

Dr. EDITH HALL quoted cases showing the risk of very severe sepsis as the result of manipulation in the presence of gonorrhœa. She doubted whether it was justifiable in that condition to consider induction or Cæsarean section.—Dr. DOROTHY LOGAN emphasised the necessity of leaving off treatment very gradually as a safeguard against relapses.—Dr. FOWLER WA commented upon the rarity of interference in obstet practice 20 years ago, and advocated minimal int ference in childbirth where there was gonococc infection.—Prof. F. J. BROWNE said that gonorrh in pregnancy was rather difficult to define. Were cases which had a discharge in pregnancy to regarded as gonorrhœa? If not, a good many cas of true gonorrhœa would be missed. But if all cas with a discharge were treated on antivenereal lin many patients would come to the venereal departme who had not gonorrhœa at all. He did not like t idea of separating venereal from ordinary patients.

Dr. RORKE, in reply, said that she would defi gonorrhœa in pregnancy as a discharge, showing t gonococcus, either from the urethra or the cervix, a she would consider a persistent discharge in pregnanc not yielding easily to treatment, as probably gon coccal with secondary infection.

Prof. MCILROY said she could not agree wi Prof. Browne that these patients should be nursed common wards. The people in attendance had to considered. She had known a nurse acquire syphi because she was not aware that the patient, who w not in the venereal ward, was infected, and nobody h taken the trouble to tell her. Another objection bringing these patients into the common ward w that a large number of them were unmarried wome and some were of the prostitute class, and it was n possible to mix them up with decent married wom occupying ordinary maternity beds. She agre however, that venereal wards should not be labell as such.

Reviews and Notices of Books

X RAY PHOTOGRAPHY.

Kontrast und Schärfe im Röntgenbilde. By J. med. WILLEM BRONKHORST, Senior Physici Berg en Bosch Sanatorium, Apeldoorn, Holla Done into German by Dr. HEINZ LOSS Schatzalp-Davos. Leipzig: Georg Thieme. 19 Pp. 104. M.16.50.

THE quality of a radiogram is determined by t degree of contrast between its several shadows a by the sharpness of their edges. These two fact are influenced by several variables. Thus contr depends on: (1) intensity of the X radiatio (2) penetrating power of the rays; (3) thickness the object and of the media surrounding it; presence or absence of intensifying screens; scattered radiation; (6) chemical composition of film emulsion; (7) nature of the developer; temperature of the developer; (9) time of devel ment. Sharpness in its turn depends on: (10) s and nature of the focal spot in the X ray tu and (11) relative distances of the focus and object from the film. Although the photograp factors (6), (7), (8), and (9) have of late been elimina through standardisation of dark-room techniq seven variables remain, each of which has a bear on either the contrast or the definition in the X negative.

Dr. Bronkhorst may be congratulated on trouble he has taken to separate the effects of th seven factors from one another, thereby unravell a nasty tangle and sorting out the strings wh govern the making of a negative for any radiolog who cares to learn how to pull correctly. The fi part of the book deals with contrast. The aut used a set of aluminium steps, increasing in thickn from 0·5–12 mm., to represent the object which w placed between two layers of water varying in thi ness from 2–6 cm. This represented the surround tissue. By subjecting this arrangement to X r of four different compositions (55, 66, 77, 88 k and by working with and without intensify screens and a Potter Bucky diaphragm, he alt

n turn, every one of the first five factors mentioned. The results are recorded in a set of curves arranged o permit of comparison and discussed in the text.

Some of the most important of the many interesting esults which Dr. Bronkhorst found have been known rom empirical experience, but are here traced to their rigins. Thus he finds that radiograms are rarely ense enough—i.e., that intensity of radiation or time f exposure should be increased—and that viewing oxes should be much more brightly illuminated. urthermore, he finds that where scattered rays are ot removed soft rays should be employed, and hat intensifying screens, apart from reducing the ngth of exposure, add greatly to the contrast in hese circumstances. He also finds, however, that he elimination of scattered rays by a Potter Bucky iaphragm more than doubles the contrast, that this pplies to both thick and thin parts of the body, that nder such conditions hard rays are preferable to oft, and that though intensifying screens do not ffect contrasts when scattered rays are absent, they re of great importance in reducing times of exposure.

In the second part of the book the author deals ith definition and explains the cause and effect n it of what astronomers call penumbra. He draws ttention to the loss of detail caused through small bjects being so far from the film that the cone of bsolute shadow is at an end before the rays reach he film. It might perhaps have been better to express he effect of distances and size of focal spot in terms f definition, rather than of blurring, since, as he oints out, the former is merely the reciprocal of he latter; the more so as in discussing the effect f depth he refers to definition and not blurring. t the end of the book is a discussion of methods of easuring, not only the size, but also the shape and ature of focal spots; and here the results are very urprising and thought-provoking.

The book is a valuable contribution to a difficult ubject and is particularly commendable for the implicity of the apparatus used, the logical nature f the deductions, and the clearness of presentation he translation from Dutch into German has been ell done, with only an occasional mannerism. The rinting and illustrating leave nothing to be desired.

THE EXPECTANT MOTHER.

Advice to the Expectant Mother on the Care of Her Health. Second edition. By F. J. BROWNE, M.D., D.Sc., F.R.C.S. Eng., Professor of Obstetric Medicine in the University of London. Edinburgh: E. and S. Livingstone. 1928. Pp. 48. 6*d*.

IT is no matter for surprise that a second edition of his little book should be called for within a few months of the first. The author has succeeded n giving, in 38 pages, advice covering every mportant point on the care of the expectant mother, he preparation for confinement, and hints on breast-eeding and care of the baby. The book has been horoughly revised and some new matter added, hiefly in the last chapter, on the general care and lothing of the baby. Perhaps, in a future edition, he author might include a chapter on the care of the nother during the puerperium. The book is presumably vritten for middle-class mothers—e.g., the novels of Sir Walter Scott are recommended as a cure for leeplessness—but the explanations and directions re so simple and practical that almost any clinic nother would understand them. The teaching is on ommon-sense lines, and is that given in most up-to-late welfare centres. The only statement in the book o which exception might fairly be taken is that ailure to thrive in a breast-fed baby is never due o poor milk. Such cases may be rare, but they do ndoubtedly occur. Analysis of the milk shows a lefinite and sometimes marked deficiency in fat, vhich amply accounts for the baby's failure to gain veight. Apart from this small point, however, we have othing but praise for the book, which deserves a wide irculation, and would be cheap at double the price.

THE NATURAL HISTORY OF A SAVANT.

By Prof. CHARLES RICHET, Membre de l'Institut. Translated from the French by Sir OLIVER LODGE. London: J. M. Dent and Sons, Ltd. Pp. 155. 5*s*.

IN his deft dissection of the character of the savant, Prof. Richet often reminds us of his great countryman, Voltaire, in his most playful mood. It is true that the description of a savant as given by Prof. Richet belongs more to the men of his own country than to those of ours, and it is characteristic of the French intellect that a French savant should be able to describe his class with such facility and charm. His definition is rigorous, for according to him a savant is one whose sole aim is the search for truth to the exclusion of everything else, even to the exclusion of the practical results of his labours for the benefit of mankind. Subjected to this test, Newton and Darwin would be accorded niches in the professor's temple of fame, but the position would be denied perhaps to Kelvin, and Bacon's conception of gathering the fruits of science for the use of mankind might possibly exclude him from the temple of the elect. One of the most entertaining chapters is that which analyses the character of savants under a series of assumed names. Prof. Richet brings his luminous analysis to a close with two eminently sound propositions—viz., that "the welfare of mankind depends upon science," and "the progress of science depends upon savants"; carrying with them the necessary deduction that the savant must be cared for.

The translation of this delightful little book has been ably performed by Sir Oliver Lodge, who has entered thoroughly into the spirit of delicate irony which pervades it.

PRACTICAL PHYSICS FOR MEDICAL STUDENTS.

By MARY D. WALLER, B.Sc., Lecturer in Physics, London (R.F.H.) School of Medicine for Women. London: H. K. Lewis and Co., Ltd. 1927. Pp. 95. 6*s*.

IN Miss Waller's book is to be found the outline of an elementary course in practical physics. It is, in fact, the course followed by students at the London School of Medicine for Women who are preparing for the London or Conjoint qualifications. As the author states, this work is done in conjunction with demonstrations which, no doubt, amplify the written word. Sometimes the aim of the experiment seems hardly defined enough; as, for instance, in the experiment on the path of a projectile, the student is advised to tabulate certain quantities though it is not made clear for what purpose. We miss diagrams, especially in the optical section; many of the difficulties of the students would disappear if diagrams were insisted upon in practice as well as in theory.

It is a pleasure to recognise the origin of some of Miss Waller's methods of teaching. Those who have had the privilege of submitting at the hands of the late Prof. A. Waller to the psychogalvanic reflex test will be glad to see it included in exercises upon the Wheatstone Bridge. The note on the "Self" method of producing and determining the direction of a current through a galvanometer is, we venture to think, traceable to the same source. We could wish that there were even more of such links with a great physiologist.

THORACOSCOPY.

Atlas Thoracoscopicon. By Dr. FELIX COVA, of the Vittorio Emmanueli III. Sanatorium. Milan: Sperling and Kupfer. 1928. With 50 plates. 37*s*. 6*d*.

Dr. Felix Cova has produced a very fine and comprehensive atlas illustrating the various pathological conditions which may be seen in the pleural cavity by means of the thoracoscope. It is evident that in the Vittorio Emmanueli III. Sanatorium of the City of Milan, the thoracoscope is used extensively, with

the result that it has been possible to reproduce most of the typical conditions that are to be found within the pleural membranes (with certain exceptions such as actinomycosis, hydatids, and primary tumours). Following on three anatomical pictures there are 38 plates illustrating the various inflammatory conditions varying from hyperæmia, through the dry and wet pleurisies to purulent effusions and fistulæ; plates of tuberculosis and syphilis, secondary malignant deposits, fracture of a rib, diaphragmatic hernia, subpleural emphysema, and adhesions are included. These are followed by nine illustrations depicting Jacobæus's operation. The coloured illustrations give a faithful picture which shows clearly the characteristics of the individual lesions. The descriptions, and the author's preface and that by Jacobæus are in three languages. Whilst the German translation of the original Italian text is excellent, the English translation leaves much to be desired.

As the author points out, this is the first atlas of its kind which has been produced, and should be valuable to all who are undertaking thoracoscopy and who are interested in visualising the appearances due to pathological lesions in the pleural cavity. The reproductions are so clear that, given experience in the technique, the recognition of the various lesions in vivo should be greatly simplified.

THE DIARY OF A MEDICAL STUDENT DURING THE MID-VICTORIAN PERIOD, 1860–1864.

By SHEPHARD T. TAYLOR, M.B. Norwich: Jarrold and Sons, Limited. 1928. Pp. 201. 3s. 6d.

Mr. Shephard Taylor, the son of a Norfolk squire, had a successful student's career, especially distinguishing himself in botany. He was for many years on the staff of the Norfolk and Norwich Hospital and is now approaching the age of 90. His diary is that of a close and shrewd observer of matters both medical and otherwise. It affords a valuable retrospect of manners, modes, and men in medicine and surgery in the immediate pre-Listerian period, together with an amusing and critical survey of London viewed through the eyes of a provincial medical student in mid-Victorian times. His discursive and chatty diary is thoroughly interesting, dealing with the serious, the intimate, and the petty with equal humour and discrimination. The diary was kept when the author was a medical student at King's College Hospital during the years 1860–64, and is more or less a record of his own career as a student, with pithy and apt comments on medical and surgical happenings—examinations, operations, and the clinical features of medical and surgical cases. These notes are interspersed with lighter matter, outside medical interest, but maintaining the personal note. There were important men at King's College Hospital in the early 'sixties, among the staff being the professors of surgery, Sir William Fergusson and Sir William Bowman, the professor of physiology, Lionel S. Beale, the professor of medicine, Sir George Johnson, and the professor of materia medica, Sir Alfred Baring Garrod. The medical student, who is open eyed, is often a sound critic of his teachers, and when not prejudiced his opinions are sometimes worth while if they were made in statu pupillari, and are not the outcome of his later reflections, and Dr. Taylor's were made on the spot. He admired greatly Sir Alfred Garrod, but condemned the then almost routine treatment of typhus fever, at the time very rife in the neighbourhood of King's College Hospital, with large doses of alcohol; this treatment Garrod followed and in the opinion of young Taylor it was responsible for the mortality-rate which prevailed. The student-critic had the courage of his views, for he wrote a paper condemning the use of alcohol in typhus fever which was ranked "A 1" by Dr. John Harley for the King's College Medical Society's Prize.

Among public events noted by the diarist, he witnessed, in the intervals of a midwifery case in a street off the Strand, the public entrance of the late Queen Alexandra into London; he saw the great Tooley-street fire, and several public executions, including the hanging of five Malay pirates at the Old Bailey on Feb. 21st, 1864. Dr. Taylor has done well to publish the commentaries of his youth; such documents make for a real comprehension of medical history, scientific and social.

JOURNALS.

LE SANG, Vol. I.—This journal[1] has now completed the first year of its life, and the six numbers so far published have fully justified its existence. Much useful material has been collected in the first volume. The subject of the blood groups, which for some reason has hitherto failed to attract much attention in France, is competently dealt with by M. Lamy and A. Mendes Correa, the former reviewing the general situation in regard to the groups and the latter the anthropological implications as they now stand; given this ample exposition of the subject in their own language it may be hoped that French workers will now turn their serious attention to the numerous relevant problems still to be solved. Among other valuable papers J. Jolly reports the results of investigations on the action of radiant energy upon the lymphoid system, and J. Barcroft describes the results of his work on the relationship of the mass of the spleen to the volume of circulating blood; this has already been reported in our own columns. A biography of that doyen of hæmatology, Prof. Georges Hayem, constitutes an interesting and very welcome feature of the first number. On the Comité Etranger it is pleasing to observe the names of "J. Barcroft (Cambridge)" and "Sir Wright (Londres)."

JOURNAL OF INDUSTRIAL HYGIENE.—February: An excellent article is contributed by S. Meyer from Dusseldorf, based on a long series of examinations of blood from workers exposed in factories to such toxic substances as benzol, toluol, xylol, naphthalene, aromatic nitro-compounds, arsine, thallium, and hydrocyanic acid. The material was obtained by Dr. Teleky in the course of his work as medical inspector of factories. Regardless of which poison was acting, invariably the lymphocytes showed an increase, and the neutrophils a decrease. A similar reaction is said to occur in diseases of the endocrine-sympathetic nervous system. The author, therefore, suggests that chemical poisons named act upon the endocrine glands and disturb their functions, and sees here an explanation of why aplastic anæmia is originated by such poisons. A further article is the fifth in a series dealing with metal fume fever, and describes the results of exposing rabbits, rats, and cats to the inhalation of zinc and magnesium oxide fumes. The authors, K. R. Drinker and P. Drinker, induce deep breathing by adding 10 per cent. CO_2 to the fume-laden atmospheres. There is a full account of the experimental work. Falls in body temperature occurred, varying with the duration of exposure, in contrast to the rises which occur in man. Zinc oxide fumes caused a heavy outpouring of polymorpho-nuclear leucocytes, indicative of an irritative process which may go on to broncho-pneumonia. Zinc, which is not in itself toxic, appears to be excreted by the kidneys and liver; the pancreas also may be concerned.

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[1] Published by G. Doin et Cie, Paris, at Fr.100 in France or Fr.115 abroad.

KING GEORGE'S HOSPITAL, BECONTREE.—Under this name a new voluntary general hospital of between 300 and 400 beds is to be created on the new Becontree Estate of the London County Council in Essex. The scheme has been approved by King Edward's Fund which, by reason of the recent extension of its radius, now includes this district. The existing buildings of the Ilford Emergency Hospital (42 beds) will be used as the nucleus of the new buildings which will be erected in contiguity to it. A board of management constituted from each of the districts served will administer the institution, to which the King and Queen have promised to contribute.

THE LANCET.

LONDON: SATURDAY, MARCH 10, 1928.

INDUSTRIAL RHEUMATISM.

THAT a scheme is on foot for the establishment in London of a clinic for the employment of physical methods of treatment with special reference to rheumatic conditions is known to the medical profession and the public. This proposal of the British Red Cross Society to found a centre accessible for certain classes of sufferers from industrial rheumatism is the first expression of a movement which has already well-known continental examples, and we are glad to learn that substantial pecuniary support has been received already. Of the sum of £40,000 which was considered to be necessary to meet the cost of founding the first clinic over one-third had been received some weeks ago, and when the figures are published it will be appreciated that an immediate start can be made in what should be a most valuable public effort. At the meeting last week of the Council of Industrial Medicine, in connexion with the Federation of Medical and Allied Services, workers of experience in that particular regard pointed out the directions in which industrial rheumatism would be amenable to organised treatment, while Dr. M. B. RAY dwelt in more detail upon the aims of the British Red Cross Society. They were voicing views held by all who have any knowledge of the misery and inefficiency which result for a large section of our population from the varied group of symptoms termed, collectively, industrial rheumatism.

The scheme of the British Red Cross Society has matured in the decision to start a clinic for the treatment of rheumatism in adult sufferers, especially industrial workers, in an accessible place in London, and an option has been secured on a suitable building in Marylebone. The first funds collected will be used for the adaptation and equipment of the premises, and the future of the project can hardly be in doubt seeing the powerful endorsement which it received in the *Times* at the beginning of this year in a letter signed by Sir ARTHUR STANLEY, chairman of the Red Cross Joint Committee, and a group of distinguished men, physicians and physiologists, officials and public workers. Further, the scheme has the support of the representatives of industrial and friendly societies and of many other health organisations, whose managers are all alive to the serious inroads made by rheumatism upon the well-being and wage-earning capacity of their constituencies. Compared with the urgency of the evil the sum of money required to start a practical organisation for its relief is small, and the proportion of that sum already promised in donations makes it seem likely on every count that the total which has been asked for publicly will be forthcoming promptly. And as the first step in their large policy proves successful, we may be sure that the British Red Cross, and those associated with them in the scheme, will be pressed to pursue their activities, for the extent of the need will be more widely recognised. A memorandum from a subcommittee of the British Committee on Rheumatism, itself a committee of the International Society of Medical Hydrology, has been issued giving a summary of what is necessary in a clinic intended primarily for the benefit of insured rheumatic persons, who constitute such a heavy burden upon medical service. More than 370,000 individuals under the National Health Insurance Act alone seek relief annually from their panel for rheumatic diseases, and as London has an insured population of nearly 2½ millions the number of rheumatic persons requiring treatment in the metropolis is huge. It is easy to see that those who are now putting out a working plan for treatment have to think largely, and must also define clearly their initial design. For the purpose of the clinic which it is now proposed to start such varieties of rheumatism as rheumatic fever, acute rheumatoid arthritis, and acute inflammation of fibrous tissues are not under consideration, for it is an ambulatorium rather than a hospital which is in contemplation. The patients who are suitable for treatment must be able to walk, or at any rate be in a condition which enables them to be brought to the centre, where the subacute forms of rheumatism, arthritic joints, lumbago, sciatica, and fibrositis will be treated, as well as the mechanical impediments which follow acute or subacute attacks, and all disabilities due to accident or injury which have assumed a rheumatic form. It will be the special object of the first centre, which is situated near Great Portland-street railway station, alike to prevent the development of these mechanical disabilities and to relieve the results of the exudations and adhesions which damage so sadly the working capacity of their victims. For this purpose the clinic will have at its disposal all the necessary equipment for the application of heat and cold, in water or vapour, for all methods of manipulation, and for the prescribing of exercises, alone or in combination with other methods. The clinic will be able to apply radiation, as heat, light, and invisible rays, and electricity in constant, interrupted, or high-frequency currents; and these physical methods will be accompanied, where necessary, with the indicated forms of medical and surgical treatment. Speaking generally, the patient will have at each visit two or more of the methods applied in succession, and this combined treatment will be continued in accordance with the progress made; and while experience suggests that slight cases may require brief treatment the value of periodical physical treatment is recognised—indeed, it can be demonstrated from the records in the possession of many medical men familiar with spa therapeutics.

We are behindhand in this country in our realisation of the toll which is paid through a large class of afflicted workers, and also in our unfamiliarity with the value of the systematic treatment of many rheumatic conditions. Over a year ago Dr. RAY, writing in our columns[1] as honorary secretary of the British Committee on Rheumatism, described the existing situation in many continental States, and demonstrated how much we lack both in care and prevision. But lately there have been signs of the intention to do better, and we welcome the fact that a conference will be held in May next at Bath under the presidency of Sir GEORGE NEWMAN, at which rheumatic diseases will be considered under their social and medical aspects by leading scientific authorities. Such a conference will prove the need for clinics like that which is now about to be started in London. We have experience of good results from systematic treatment at our spas, where scientific hydrology combined with physical procedure is systematically employed, and the place of British spas will be made clearer by the relegation of cases from the new clinic to certain centres for apt treatment. Further, while the medical profession and, through them, the public can be familiarised

[1] THE LANCET, 1926, ii., 935.

with the scientific use and conditions of physical methods, material will be available for the investigation of the influence of occupations upon the population, and facilities will be furnished for the concurrent investigation of incipient subacute and chronic diseases. We have some distance to make up, but the signs of an earnest start are promising.

ABSCESS OF THE BRAIN.

CEREBRAL abscess must always be regarded as imminently dangerous to life, for it is almost invariably fatal if untreated. Yet there is no disease of the brain which can be approached with greater confidence of success, and as long ago as 1893 MACEWEN was able to report 25 cases, in 19 of which operation was performed, with 18 recoveries. The reasons for a hopeful outlook are not far to seek. Though occasionally due to infection through a compound fracture of the skull, or to transmission of bacteria from infective foci in the lungs or pleural cavities, cerebral abscesses are generally caused by infection spreading from the frontal sinus or middle ear. In those of otogenic origin, which far outnumber all the other varieties, extension of disease to the brain is usually heralded by symptoms referable to the ear. The infection passes in certain clearly defined directions and the abscess is to be found in the white matter of the adjacent temporal lobe or cerebellum. It tends to become "encapsulated" and its ill-effects are produced not by destruction of the vital parts of the brain, but by a local and general rise of intracranial pressure. These facts mean that to discover its presence and situation should be relatively easy compared, let us say, with the diagnosis of intracranial tumours. But in actual practice the warning signs may be slight and the rapid rise of intracranial pressure, so characteristic of abscess formation, may speedily induce a drowsiness which interferes with examination of the patient and thus militates against accurate localisation. It is for this reason that complete neurological investigation is urgently required in all cases of chronic otitis media in which headache makes its appearance, and in all cases of acute mastoiditis in which the temperature fails to settle after operation. The localising signs that should be sought for have been admirably described by Dr. C. P. SYMONDS [1] in a recent address to otologists. For cerebellar abscess, which is usually situated in one lateral lobe, Dr. SYMONDS regards incoördination of the upper limb on the corresponding side, and nystagmus, or lack of conjugate movement of the eyes towards the side of the lesion, as the most valuable diagnostic signs. For temporal abscess weakness of the face, signs of involvement of the pyramidal tract, and defects of the visual fields, on the side opposite to the lesion are of cardinal importance. When the abscess is in the left temporal lobe (in a right-handed person) an additional sign of great value is dysphasia, often limited to a difficulty in naming objects and not necessarily apparent in the patient's ordinary conversation.

In the Hunterian lecture which we publish on another page Mr. MILES ATKINSON lays stress on the importance of certain early general signs of intracranial suppuration. He considers that in cases of otitis media the onset of cerebral abscess is characterised by "an initial feeling of chilliness, possibly even a rigor, headache, some rise of temperature, and nausea or vomiting," and he urges that diagnosis should, if possible, be made from the detection of these changes before the onset of the localising signs described above. Mr. ATKINSON does well to call attention in this way to the early stage of abscess formation and he is probably correct in believing that the mastoid process should be explored, or reopened, at this stage; for the spread of infection to the brain can be limited, and development of cerebral abscess can often be prevented, by timely and adequate drainage of mastoid and extradural abscesses. It is doubtful, however, whether he is wise in recommending exploration of the brain before the appearance of the localising signs, as patients who show symptoms such as he describes recover sometimes without any surgical interference with the brain itself. Success in treatment depends on an understanding of intracranial pathology. The rise of pressure occasioned by the formation of a cerebral abscess is both sudden and progressive, and the brain has little opportunity of adapting itself to the new conditions prevailing within its rigid covering. The degree to which tension is raised is shown by the remarkably rapid onset of papillœdema, severe headache, drowsiness, and other signs of acute hydrocephalus, and by the appearances seen at operation. When an abscess is opened its walls are rapidly obliterated by the pressure of the surrounding brain, and it is notorious that an abscess which has been partially emptied is extremely hard to find again, either at operation or by subsequent passage of the exploring needle. Failure to empty the abscess completely allows pus to be trapped in the depths of its cavity so that recurrence may follow after a period of temporary improvement. No time is so favourable for drainage of an abscess as the moment when the pus is first discovered, and for these reasons it is inadvisable to treat the condition through a small opening in the skull, or by such measures as repeated aspiration and the insertion of small drainage-tubes which do not reach to the bottom of the abscess cavity. It seems more rational to make a wide opening in the skull and dura, the situation of the abscess having previously been mapped out by passage of a brain needle down to—but not through—the resistant wall of the abscess. When the abscess is opened a large drainage-tube should at once be passed down into the depths of the cavity, where it is left to be extruded by the brain during the development of the fungus cerebri that usually follows. The formation of fungus cerebri is to be desired, since it displaces the remains of the abscess cavity to the outside of the skull and thus allows rapid restoration of normal pressure within. It soon heals and subsequently gives no trouble.

Thirty-five years have passed since MACEWEN published his remarkably good results, and it is to be regretted that Mr. ATKINSON does not give us the results of more modern workers. In spite of advances in neurological diagnosis and surgical treatment, it would not be surprising to learn that no one has been able to improve on MACEWEN'S successes. Modern specialism has not been favourable to the treatment of cerebral abscess, inasmuch as it has produced three artificially restricted fields of endeavour—aural surgery, neurology, and neurological surgery—each of which tends to monopolise some branch of practice that is essential to successful management of the disease. Such specialisation inevitably leads to divided responsibility for the treatment of a condition which is pre-eminently one of emergency demanding the control of a single individual who is thoroughly familiar with all its aspects.

[1] Symonds, C. P.: Some Points in the Diagnosis and Localisation of Cerebral Abscess, Proc. Roy. Soc. Med., 1927, xx. (Section of Otology), p. 41.

HEAT IN THE RELIEF OF PAIN.

THE medical profession owes an increasing debt of gratitude to the chemists and biochemists of the great manufacturing houses for their labours in making available so many lines of treatment in the handy form of tablet or ampoule. There is a danger, however, that this "treatment made easy" may lead us to forget the use of, and method of using, some of the older therapeutic measures which have stood the test of time. Blood-letting, cupping, and the rest were powerful weapons in the careful hands of the older physicians, and Dr. JOHN HARVEY KELLOGG has done a service by drawing attention in the *American Journal of Surgery* for December last to the value of heat for the relief of pain. He traces the therapeutic use of heat in this connexion from the lower animals, through children and the primitive people of all countries, to the present day. The exact mode of action is not fully understood. Heat may relieve local congestion by producing a collateral hyperæmia, it may break down a vascular stasis, and it is suggested that it causes an inhibition of the sensory nerves and so relieves pain by acting through the thermal nerves of the skin. This power of relieving pain seems to be a specific property of heat, common to heat waves of all lengths but most marked in the short infra-red rays, possibly on account of their greater penetrative power. To obtain the best results the heat must be intensive, or as "hot as the patient can bear," and to apply it, careful and continuous attention is required either from doctor or nurse. It is not just a prick with a hypodermic needle and away. Heat can be applied by compress, poultice, hot-water bag, hot stones, heated air or electricity in various forms, and may be given either dry or moist. The intensity of dose may be greatly strengthened by combining some method of cooling the skin surface, such as evaporation or the intermittent use of cool air. Treatment of this nature, like every form of therapy, requires a knowledge of when and how it should be employed, and it ought not to be left to a nurse or an attendant as being below the personal attention of the physician. Unfortunately this is often done because the physician is not skilled in the niceties of its use. Sir LAUDER BRUNTON, in his "Action of Medicines," published over 30 years ago, gave minute directions as to the proper making of a poultice and advised his readers to connect in their minds "the two p's: pain and poultice." Does poultice-making still find a place in the modern medical curriculum? It is doubtful. The apprentice system had much to commend it, and one of its virtues consisted in the handing down from generation to generation of a number of practical points in what might be called minor medicine and surgery, the knowledge of which made the distinction between the master and the apprentice. No one who has seen the relief which follows a good poultice in a case of abdominal colic, or who has obtained for his pneumonia patient a couple of hours' sleep with a well-timed mustard paste, will ever doubt the value of heat therapy. Besides, it reduces the drug bill and lessens that chance accident which every true physician dreads—the formation of a drug habit.

A MEDICAL CRUISE.—Every year the *Bruxelles Médical* organises a cruise for doctors, their families, and their friends. This year it will start at Bordeaux on July 29th and end at Marseilles on August 18th, the places to be visited including Vigo, Funchal, Santa Cruz de Ténériffe, Las Palmas, Casablanca, and Ajaccio. Information may be had from the Section de Voyages de *Bruxelles Médical*, 29, Boulevard Adolphe Max, Brussels.

Annotations.

"Ne quid nimis."

WELFARE OF THE BLIND.

THE yearly reports of the Advisory Committee on the Welfare of the Blind show a steady improvement in their condition since the passing of the Blind Persons Act of 1920, and the latest[1] of them states that 14,563 blind persons between the ages of 50 and 70 are in receipt of Government pensions—i.e., 84 per cent. of those within the eligible age. Schemes for promoting the welfare of the blind have been submitted by all the 146 local authorities concerned, and having been approved by the Minister of Health are now in operation. In all but 30 cases the arrangements made are working quite satisfactorily, the difficulties in the minority of cases being due partly to the want of an efficient voluntary organisation and partly to the difficulties of administration in rural areas with a widely scattered population. The expenditure incurred by local authorities in this connexion and the grants in aid from the Ministry of Health have both been steadily growing, the amounts under these headings for the financial year 1926–27 under the former head being £173,828 and under the latter £112,510. The bulk of this money was spent on workshops, home-workers, home-teaching, and books. The statistics given show that the Blind Persons Act has led to the discovery of a large number of blind who were hitherto unknown. Apparently the granting of free wireless licences to the blind in 1926 has led to the discovery of a considerable number who were unregistered. Another thing that comes out is a slight decrease in the number of the blind under the age of 21 in spite of a considerable increase in the later decades, a decrease which presumably indicates some degree of success in the measures in operation for the prevention of infantile blindness. Apropos of these statistics it is difficult to accept the figure 0·5 per cent. which purports to represent the total blindness existing under the age of 5 years, compared with what exists at all later ages. This figure appears to be quite inconsistent with the figures in another table showing the percentage of the total of blind persons who became blind at various ages. It is true that between 1919 and 1927 the percentage of those who became blind under the age of one year compared to the total number diminished somewhat, but in the latter year it was still 17·4. We made a similar criticism of the figures of the sixth report published in 1926[2] and suggested as an explanation that a considerable proportion of children under school age escape registration. It must be a very large proportion. Other figures show that although the total number of blind persons employed in remunerative work has increased between 1919 and 1927, the percentage in relation to the total number of the blind had decreased from 24·6 to 19·6. This is accounted for by the large number of blind persons over 50 added to the register. One of the favourite occupations is piano-tuning. "It would appear," says the report, "that the general remunerativeness of this occupation has attracted a number of persons who are not really suitable or competent, and in the interests of the qualified tuner we think it desirable that in future only those persons with the highest technical and personal qualifications should be encouraged to take up this occupation." We are glad to observe that an important section of the report is devoted to the difficult problem of partially blind children. The partially blind are outside the scope of the benefits conferred by the Blind Persons Act. It is estimated that there are some 7000 partially blind children in England and Wales, and at present there appears to be accommodation for only 1500 of them in special schools for myopes and the partially blind. Meantime there is considerable pressure put on the managers of blind schools to admit these children, for whom the

[1] H.M. Stationery Office. 1928. Pp. 33. 6*d*.
[2] THE LANCET, 1926, ii., 760.

regimen is not altogether suitable. The report rightly deplores the fact that so little has as yet been done to equip persons of this class for taking their place in the industrial life of the country. The suggestion is made that there is ample scope for voluntary enterprise to take up and develop what is really a new social service.

COLLOID CANCER OF THE STOMACH.

IN a thesis submitted to the Graduate School of Minnesota Dr. J. W. Stinson,[1] of the Mayo Foundation, states that the first statistical studies of gastric carcinoma were published in the *British and Foreign Medical Review* of 1857 by Brinton, who in a series of 135 cases found that 9·4 per cent. were of the colloid type. In a series of 2516 pathologically proved cases of carcinoma of the stomach examined at the Mayo Clinic from March 1st, 1913, to May 1st, 1925, colloid changes were found in 121, or about 5 per cent. Twenty-five were in women and 96 in men; the average age of the women was 50·5 years, and of the men 53·3 years, the general age being 52·7 years. The oldest patient was aged 79 and the youngest 31. As regards the symptoms, Dr. Stinson says that there was nothing to differentiate colloid carcinomata from other types of gastric cancer. The only certain method of distinction consisted in exploratory operation and microscopical examination of the tissue. The structure of colloid carcinoma is similar to that of ordinary adenocarcinoma of the stomach except that a large amount of mucus is present. In typical cases the whole wall of the stomach is almost completely changed by the presence of colloid material, so that the cut surface is clear and gelatinous and of a soft consistency. Colloid changes may be noted in the earliest stages of the carcinomatous process and are frequently found on microscopical examination when they are not visible to the naked eye, especially in cases with small ulceration in which the diagnosis lies between benign ulcer and carcinoma. In the present series 97 cases, or 80 per cent., were operable, and the growth was removed; 19 were inoperable and 5 were suitable for palliative measures. The percentage of cases still alive three and five years after operation is about the same as in the non-colloid types of carcinoma, but the incidence of late recurrence is greater in the colloid variety. The post-operative mortality-rate is about the same as in the non-colloid types, the post-operative life expectancy being less in young patients.

THE RED CROSS BLOOD TRANSFUSION SERVICE.

ONE day in 1921 the Camberwell division of the London Branch of the British Red Cross Society was asked for a blood donor for an emergency case. Four members immediately volunteered, and the secretary of the division, seeing that the work was eminently suitable for the Society, instituted a roster. One of those who responded to the appeal was a Rover Scout, who induced his colleagues to adopt blood transfusion as one of their forms of service. In 1925 the Red Cross headquarters took over the organisation, and appointed a committee consisting of representatives from the Society, the Rovers, and the Hospitals Association. In 1926 no fewer than 737 applications for donors were received, and on three occasions only had the request to be refused. The report of the Blood Transfusion Service for 1926 contains a very interesting account of its working. The office is open day and night; in fact, 198 of the calls during the year were urgent. Most donors are called up by telephone at their place of business, and for this reason 6 P.M. is the best time to make the appeal, as it obviates special leave. Until the post offices close, express messages are sent, and after that summonses are transmitted through hostels and private persons with telephone facilities. There is great need for more volunteers for this part of the work. Like most altruistic services, this one suffers much from popular ignorance. The belief that transfusion is dangerous and harmful to the donor is almost universal, and only many years of public education will eradicate it. The truth is, as medical men well know, that the operation is never dangerous and is often beneficial to the donor. The rules of the Society protect donors from being operated on by students and from any but the needle method of extraction. The lay press is generally very helpful in appealing for volunteers, but occasionally prints indiscreet paragraphs about "heroism," which lead to apprehension and a number of withdrawals. Further economies in the service could be effected by hospitals if they would take more care to eliminate the possibility of obtaining a relative before calling up the service, and would avoid as far as possible calling on universal donors (Group 4). The scheme has been financially self-supporting from the start. Two hospitals subscribe 10 guineas each a year, but the bulk of the revenue is derived from donations from private patients and the sale of tinfoil, £60 worth of which was collected in 1926. Although there is still urgent need for volunteers, the London service is well set upon its feet, but the provinces are not so well supplied, since, apart from a few local services there is no regular organisation at work. One great difficulty is the lack of facilities for grouping patients and donors, and even of surgeons competent to carry out transfusion without pain and inconvenience to the donor. No volunteer, however altruistic, will submit to a series of incisions which he knows are unnecessary. That a service of such value should be wasted on this account is a reproach which we hope the provincial hospital staffs will do their utmost to remove.

STANDARDISATION OF REMEDIES.

THE second annual report of the laboratories of the Pharmaceutical Society of Great Britain shows steady continuance and expansion of the invaluable work they perform for the public health. The two main purposes of this work are pharmacological research, especially into methods of assay, and the biological testing of manufacturers' products. Two events particularly marked 1927. At the beginning of March the new department for vitamin tests began to receive samples, and at the beginning of August the laboratory began to take its part in the administration of the new Therapeutic Substances Act, a duty which meant a great increase in the number of samples of pituitary extract submitted for examination. Alongside this work research has been carried out at Queen Charlotte's Hospital to relate the new system of dosage of this extract to clinical requirements. The Act enjoins that manufacturers shall state the strength of their preparation in units, but leaves them free to sell as many units as they like in each ampoule. The majority, following the United States Pharmacopœia, put up 10 units in 1 c.cm. The preliminary observations of the laboratory staff show that 10 units is a wasteful and occasionally dangerous dose, and that 5 units in 1 c.cm. is sufficient for general purposes. A suggestion that is to be further tested is that manufacturers should prepare doses of 2 units only, a quantity which appears to be safe at any stage of labour where there is no mechanical obstruction. In addition to this work, the staff have been examining the action on the parturient uterus of the various constituents of ergot, and have come to the conclusion that, as the action of histamine is powerful but evanescent, and as tyramine is inert the value of ergot lies in its specific alkaloid ergotamine or ergotoxin alone. The report goes on to say that since the water extract of the British Pharmacopœia contains none of this alkaloid, not one ounce of the thousands of gallons made since 1914 can have had any medicinal value.[1] An assay by the Broom and Clark method of several samples of ergot prepared

[1] Surgery, Gynecology, and Obstetrics, February, 1928.

[1] These investigations of uterine stimulants have been discussed in a leading article in THE LANCET (1927, ii., 560).

according to the U.S. Pharmacopœia showed that, whereas Spanish and Portuguese ergot yielded a fair proportion of active samples, 26 out of 27 samples of Russian or Polish ergot had no appreciable activity. This result has been confirmed by the U.S. Department of Agriculture. An investigation into the best method of preparing liquid extract of ergot showed that only the extracts of the U.S. and Dutch pharmacopœias retained specific activity. Among other assay work a standard has been fixed for squill, and results from the rat method of examining digitalis tinctures have been compared with the results obtained on patients; the comparison is nearly complete and is unexpectedly promising. In testing digitalis samples the Society ceased last year to follow the recommendation of the Geneva Conference, which urged that certificates should only be given for samples which did not differ from the international standard by more than 25 per cent. In view of the large number of samples which exceed the upper limit of potency, and the possibility that the next conference may revise this recommendation, a certificate is given for strong samples in an altered form, stating by how much the international standard is exceeded.

The other activities of the laboratory have a large range. Work on the œstrus-producing hormone has confirmed the principles of determination laid down recently by Trevan. Research into the metabolism of rats on a fat diet, especially into ketonuria, shows that the excretion of acetone bodies may be ten times in summer what it is in winter; that it can be inhibited by the injection of pituitary extract or adrenalin, and strikingly increased by insulin. The experimenters conclude that the amount of carbohydrate in the diet has only an indirect influence on ketonuria. The vitamin-testing department is now in full swing. Rats have been obtained from several first-class sources, and an attempt is being made to establish a stock colony of Wistar rats (a highly inbred strain) and feed them on a diet of known composition. An effort with Steenbock's diet broke down in the third generation, probably owing to a deficiency of accessory factors in the particular maize and lucerne used, and Sherman's has failed for the same reason. Nevertheless, success is essential if a serious advance is to be made in vitamin estimation. Ordinary rats may vary enormously in their requirements; six Wistar rats will give a degree of accuracy attainable only with 10 casually chosen animals. To obtain accurate results and keep the numbers within reasonable bounds it is necessary to secure the greatest uniformity. The tests for vitamin D are now fairly certain, and McCollum's "line" test has been verified by X ray photographs, but as yet no standard exists for vitamin A. Höjer's method of estimating vitamin C is being investigated. So far 43 samples have been tested for manufacturing firms by this department, which promises to maintain the high traditions of the Society.

THE PHYSICAL BASIS OF CONDUCT.

"I hope you have recovered from the snappishness from which you were suffering when I last saw you" was, we are told, a common morning greeting among the Erewhonians, and "if the person saluted is still snappish he says so at once and is condoled with accordingly." When Samuel Butler's book was first published in 1872 it was regarded as a piece of amusing satire, far removed from rational procedure. It seems not unlikely, however, that another 50 years will see us taking a very similar attitude to that of Mr. Nosnibor in these matters. Such at least was the conclusion to be drawn from Sir Farquhar Buzzard's discourse to the Royal Institution on March 2nd. He brought forward evidence, supplied by anatomist, physiologist, and pathologist, to show that every change in behaviour has its corresponding change in the central nervous system. Fatigue, heat, or a circulating toxin will so act on the nervous element that its granules are broken down, its shape altered, and its nucleus displaced. Already we are tolerant of the peevishness of convalescence, realising that it is the result of a direct physical cause for which the patient should not be held culpable. We know that the small boy, described by the lecturer, who displays for a week or so after an attack of influenza the primitive emotional reactions proper to a much younger child, will in a short time regain the inhibitions he had recently acquired and become once more the well-mannered person we have produced by careful tuition. Much bitter experience has taught us that punishment, care, and education avail nothing for the victim of encephalitis lethargica, who is, as Sir Farquhar Buzzard put it, hopelessly lacking in moral responsibility because the germ has made havoc among those cells and fibres which should exercise inhibition over childish behaviour. The physiologist, again, has shown that bad language belongs really to the group of "release phenomena" and probably means no more in the bargee or the overworked business man than in the patient going under an anæsthetic or the experimenter shut up in a chamber from which oxygen is being withdrawn. Nevertheless the teaching that sickness is crime and crime is disease has hardly begun to penetrate the public mind, and it is in paving the way for a very necessary change of public opinion that lectures like the discourse at the Royal Institution are so useful. When the intelligent layman realises that changes in behaviour are associated with alteration in structure he will be approaching the disorders of body and mind in a rational and enlightened manner, and he will see the law in its proper light, as an instrument for the public convenience rather than a mechanism for distributing abstract justice.

TREATMENT OF STREPTOCOCCAL INFECTIONS WITH ARSENICAL COMPOUNDS.

It will be remembered by those familiar with the literature that after Ehrlich introduced salvarsan for the treatment of spirochætal and protozoal infections the drug was used by a great many uncritical observers for the treatment of all types of infection, in much the same way as insulin has been used for conditions other than diabetes. After a time these empirical experiments were dropped and the drugs of the salvarsan series are now employed for the treatment of protozoal infections alone. The question of their use for other purposes is once more raised by Dr. Leonard Colebrook's report [1] to the Medical Research Council, which describes an attempt to ascertain their effect on streptococcal infections. The work has been undertaken in a very thorough and careful manner with adequate controls, and the conclusion is reached that a small group of trivalent arsenicals differ very decidedly from almost any other known compound hitherto used in bacterial infections. It is clearly demonstrated that the toxic effect of these substances on the human leucocytes is much less than on certain microbes, such as the hæmolytic streptococci, so that it becomes possible, by suitable adjustment of the doses, to avoid a harmful effect on the leucocytes, while at the same time the drug has an antiseptic action in the blood stream. Dr. Colebrook says that, "broadly speaking, the destructive affinity of these drugs for hæmolytic streptococci is greater than for human leucocytes—that is to say, stronger solutions are required to produce leucotoxic effects than are necessary to kill streptococci." It would appear, therefore, that good results may be expected from this form of treatment. The compounds so far tested may, it is stated, be placed in the following order of increasing toxicity for human leucocytes: metarsenobillon, kharsulphan, and sulfarsenol, approximately equal; stabilarsan; salvarsan; neosalvarsan; and lastly, silver salvarsan. Unfortunately it is found that the leucocytes of patients suffering from streptococcal infections are much more sensitive to the action of these arsenical

[1] A Study of Some Organic Arsenical Compounds with a View to their Use in Certain Streptococcal Infections. By Leonard Colebrook, M.B., B.S. Lond. Bacteriological Department, Medical Research Council. Special Report Series No. 119.

compounds than are the leucocytes of normal people. The problem which Dr. Colebrook has been studying is particularly well suited to the technique evolved in the laboratories of Sir Almroth Wright, but as the result is somewhat tentative, it is difficult to assess the clinical value of the work so far accomplished.

MEMORIAL FUND TO SIR DAWSON WILLIAMS.

IT was naturally decided, and very rightly, that the movement for a testimonial to Sir Dawson Williams, which was started the week before his death, should continue, and that the resulting fund should be employed in the institution of a memorial to him, connected in some intimate and fit manner with the advancement of medicine. The fund will remain open for a time in order that answers to the appeal may be awaited from medical men resident abroad. All who wish to be included in the lists, the first one of which will be published shortly, are requested to send their contributions at once to Sir StClair Thomson, 64, Wimpole-street, London, W., to whom cheques should be made payable, while the envelope should be marked "Dawson Williams Testimonial."

MEDICAL EDUCATION.

IT is often said that academic teachers have too much say in medical education and practising doctors too little. The reply that medical education is an educational and not a professional problem and should therefore be dealt with by educational rather than professional experts is probably not altogether sound in medicine or in the other technological subjects of university training. However that may be, the Commission on Medical Education, which has its headquarters in New Haven, U.S.A., gives in its second report a very interesting account of its attempt to obtain the views of medical men in ordinary practice on the subjects with which the Commission concerns itself. A circular was sent out to a number of doctors named by their local medical societies as successful practitioners and over 1600 replies were received. These were divided into three groups, the first graduating before 1900, the third in 1911 or later. Owing to the rapid changes which have taken place in medical education in America, these three groups had themselves received very different training. Thus only 20 per cent. of the first group had had as much as four years' instruction (i.e., beginning with anatomy and physiology) against 100 per cent. of the third group, 53 per cent. had had no pre-medical university teaching compared with 18 per cent., 61 per cent. had held no house officership against 8 per cent., 70 per cent. were in independent practice when they were 25 years old compared with only 6 per cent. But when the medical men trained in these diverse ways stated their opinions as to what training was desirable, there was remarkable unanimity, whether they had themselves experienced what they recommended or not. Thus over 90 per cent. in all three groups consider pre-medical university work desirable, nearly every one thinks a four-year medical course necessary, and an internship desirable. What was good enough for them is not good enough now. But while these practitioners think well of some of the main changes which have overtaken the curriculum, they are, of course, far from satisfied with the present arrangements. The overcrowding of the course and consequent absence of time for study, undue emphasis on laboratory work, too much attention paid to rare and too little to common diseases are among the most frequent criticisms. At the same time the Commission reports that it is generally appreciated that the acquisition of a proper philosophy of scientific method by the student during his training will largely determine the level of his practice in the future, and there is no serious suggestion that the course should be focused on practical problems alone. Many doctors reported that they had received signal and fruitful inspiration from one teacher or another, and most of those who answered the question about the essential ingredients for success in practice put character and hard work first. The report, with all the details which it gives, deserves careful study because it represents the aims of the average good-class practitioner and not those of the avowed reformers and reactionaries who alone are commonly vocal.

SERUM TESTS FOR SYPHILIS.

THE Meinicke micro-reaction, on which Dr. David Prentice reports in our present issue (p. 493), represents a further stage in the search for some simple and quick modification of the Bordet-Wassermann test for syphilis—a search which has already resulted in the development of the Sachs-Georgi, the sigma, and the Kahn tests. The reaction may be performed either macro- or microscopically; and while Dr. Prentice's paper deals with the latter method a full account of the macro-reaction by Dr. E. A. Rucker and Dr. L. E. H. Whitby may be found in the February number of the *British Journal of Experimental Pathology*. In its barest essentials the technique consists in the admixture of a certain quantity of the serum to be examined with a certain quantity of a special "antigen." Full details of the preparation of the antigen are given by Rucker and Whitby, but those who wish to perform only a limited number of tests will probably find it easier to procure it from Meinicke's laboratory. As the reaction depends upon precipitation, and the complement is not concerned, the serum to be examined requires no preliminary inactivation. The report given in both papers is favourable, and in the hands of these three observers the reaction gave results closely approximating to those of the Wassermann test. Rucker and Whitby point out, however, that they obtained no evidence that the Meinicke reaction is more sensitive than the Wassermann, which makes them regard it as definitely less sensitive than the sigma. For the present there is obviously no question of the Meinicke reaction or any of its precursors replacing the Wassermann reaction in the diagnosis of syphilis, but in its microscopic form, which requires only a few drops of blood withdrawn by puncture of a finger, it has great advantages in pædiatric and asylum practice. The macroscopic technique, furthermore, seems to be an advance on all previous reactions of its kind and certainly marks an important step towards a method which will send the Wassermann reaction into honourable but unregretted retirement.

MEDICAL AND DENTAL REGISTERS.

WE have received from the General Medical Council the three official registers for the year 1927. The Medical Register, among its 102 prefatory pages, includes the amending Act of 1927 giving effect to the mutual registration as between Great Britain and the Irish Free State. In this section the important warning notices have been revised and brought up to date, the warning in regard to association with uncertified women practising as midwives having taken more precise form in view of recent legislation. In the warning notice addressed to dentists has been inserted a paragraph on dangerous drugs, similar to that addressed to the medical practitioner. The only other substantial addition to the prefatory section is a somewhat melancholy table showing the several British possessions and foreign countries with which reciprocity formerly existed and no longer exists. Belgium, of course, renounced this kind of coöperation seven years ago, but the Canadian provinces of New Brunswick, Ontario, and Saskatchewan have thought better of their reciprocity within the past two years, and in the case of Ontario the change has only just come into force. The number of persons on the Medical Register at the beginning of the present year was 53,769, being an increase of 1155 on the previous year. During the year 1927 1941 names were added to the Register, 971 in England, 462 in Scotland, 274 in Ireland, 215 and

the Colonial and Foreign Sections. At the same me 71 names were restored to the Register and 035 removed, 840 on evidence of death, 2 on ceasing practise, 191 under Section XIV. of the Medical ct as having failed to reply to the Council's inquiry, nd 2 were erased by order of the Council. The entists Register, besides containing a convenient cord of the various Acts relating to dentistry, ts out in full the regulations of the Dental Board, ith an appendix of forms for dental registration. he total number of names on the Dentists Register the close of the year 1927 was 14,576, being an crease of 181 on the previous year. The number names added by registration during the year was 0 in the British list and one in the Colonial list. f these, 363 registered with qualifications and 38 nder the Dentists Act, 1921. At the same time 5 names were restored to the Register and 575 moved, 135 on evidence of death, 2 on ceasing to actise, 429 for non-payment of registration fees, on failing to reply to the Board's inquiry, and names were erased by order of the Medical Council. he Dentists Register contains a classified local t of dental practitioners which has special value ving to the disappearance of the names of dental rgeons from Churchill's Medical Directory and e discontinuance of the Dental Surgeons' Directory. he Medical and Dental Students' Register shows at 1214 medical students and 244 dental students gistered during the year. In the case of medical udents the number has apparently settled down to a vel adequate to supply the annual loss from death or tirement; an entry of under 250 will certainly not ffice to maintain the level of dental practitioners at s present figure. All three Registers are published for e General Medical Council by Messrs. Constable and ., 10, Orange-street, London, W.C. 2, the prices being *s.*, 12*s.*, and 7*s.* 6*d.* respectively. It may be noted at copies for previous years are available at the eatly reduced figures of 5*s.*, 1*s.*, and 2*s.* respectively.

THE HEATING OF BUILDINGS.

LIKE their ventilation, the heating of buildings is t to be haphazard. Of the several methods ployed, the most popular is, of course, radiation m coal fires, gas fires, or electric radiators, and is method has many supporters who claim that is pleasant and exhilarating because the rays do t warm the air through which they pass so much the objects on which they impinge. The opposite m of heating is the introduction of warm air the plenum system; the process is here reversed, ce objects in the room are warmed by heated air stead of the air being warmed by heated objects. t-water pipes and steam radiators have much e same effect as hot air, for they chiefly transmit rmth through currents of air heated by contact th them, and only to a minor degree by radiation. ite recently a new method of radiant heating has en introduced, in which large surfaces or panels, sh with the surface of ceilings, walls or floors, are rmed by concealed coils of hot-water pipes. The tensity of the radiation so obtained is some 1400 nes less than that from a fire at about 2000° F., so at panel-heating is hardly in the same category as at from fires. Thus it is somewhat misleading, say the least, to suggest that the radiant warmth m a ceiling approximates closely to the effect oduced by sunshine. On the other hand, the thod deserves consideration, if only because coal gas fires are not suitable or economical for heating ge buildings, and a useful report [1] just issued by e Industrial Fatigue Research Board describes an vestigation of its application to offices and factories. account is first given of the Moll thermopile, ed for measuring the amount of radiant heat emitted from various surfaces, and details are then supplied of a large number of observations made, and sensations recorded, under varying conditions produced by wall-panel heating, ceiling-panel heating, under-floor heating (studied in the new Liverpool Cathedral), panel heating in factories, and high temperature radiations. The most characteristic feature of panel heating was found to be an even distribution of heat over the room, the air temperature of which might not vary more than 1° to 2° F. at any position or level; with hot-water radiators and plenum systems the air temperature near the ceiling may be 10° to 20° warmer than it is near the floor, thus leaving the inmates' feet too cold and their heads too warm. Generally with panels the walls, ceilings, and floor are about 3° warmer than the air, whilst with hot-water radiators the reverse holds good. Direct panel radiation is said not to have caused any definite subjective effect, such as is experienced when gas or coal is used, and whilst it was found that rooms heated by fires felt comfortably warm when 7° cooler than convection-heated rooms, the permissible reduction of air temperature in panel-heated rooms was less than 1°. Panel heating, without claiming comparison with the sun's rays, is held to have a great future, and it may come to replace hot-water radiators and plenum air installations. In big rooms, however, any system of radiant heating ought to be supplemented by small hot-water radiators before each large window, so that down-drafts of cold air may be counteracted.

[1] A Physiological Study of the Radiant Heating in Various Buildings. By H. M. Vernon, M. D. Vernon, and I. Lo Rainsmith. Report No. 46. Industrial Fatigue Research Board. 1928.

A HUNTERIAN CELEBRATION AT ST. GEORGE'S.

THE Hunterian Society of St. George's Hospital celebrated the 200th anniversary of John Hunter's birth by inviting the Hunterian Society of London to a conversazione on March 1st, when Sir Humphry Rolleston and Sir Crisp English delivered short addresses. This was a time of centenaries, said Sir Humphry. The four most famous names in British medicine were those of William Harvey, Thomas Sydenham, John Hunter, and Joseph Lister, and whilst the centenary of Lister's birth had been celebrated last year, the tercentenary of the publication of Harvey's "De Motu Cordis" would be commemorated in two months' time. It was fitting that Harvey and Hunter, both of them experimental philosophers, should be linked together in grateful recollection. Hunter was the first to describe the circulation in crustaceans and insects, just as Harvey discovered the circulation of the blood in the higher animals; Hunter, like Harvey, studied the earliest stages of life, and was responsible for the dictum that "embryology indicates the steps by which higher forms in a group of animals have been evolved from a lower." The more he was known the more wonderful did he seem, and as the years went by his intellectual stature seemed only to grow grander; anatomy, physiology, pathology, surgery, and biology in its widest sense found in him their master. But though his influence covered so wide a field, it remained specially appropriate that his bicentenary should be celebrated at St. George's Hospital, of which he was the chief glory, and where he first instituted clinical teaching in surgery. Sir Humphry concluded by referring to Hunter's burial in Westminster Abbey and to Gilbert's bronze bust which adorns the entrance to the St. George's out-patient department. Sir Crisp English then gave a graphic sketch of the places with which Hunter was associated, from his home in Scotland, where he worked for a while as a cabinet-maker, to St. George's Hospital, where, as a surgeon, he practised, taught, and died. He was a man without the advantages of education and culture, which accounted for his roughness of manner and perhaps his difficulty in getting on with his colleagues. But the pupils who had written of their master knew more of Hunter than his critics did, and it was impossible for us to-day, looking at his portrait, not to believe that their appreciation was justified. In his spacious house at Earl's Court Hunter had

many sorts of animals devoted, like himself, to science, and Sir Crisp showed drawings of the house and of the boiler in which Hunter prepared his skeletons, including that of the Irish giant now in the Hunterian Museum of the Royal College of Surgeons of England.

During the conversazione there was a display of many interesting specimens and letters.

THE COMPOSITION OF BOROCAINE.

ANNOUNCED some two years ago under the title the Borocaines: a New Class of Local Anæsthetics, these compounds entered the medical world with a certain éclat. Borocaine, or ethocaine borate, was claimed to be less toxic than the corresponding hydrochloride, novocaine, since its alkaloid content was only about two-thirds as great. It was also said to be ten times as effective as novocaine, and more powerful even than cocaine, a claim that clinicians have not been able to support. The real interest in the discovery was that it was something new. A careful investigation[1] of this claim by Dr. G. W. Collins leads him to the conclusion that the borocaine of Copeland and Notton is identical with the novocaine borate prepared by Einhorn and Uhlfelder, described by them in 1910, and used by Gros in 1911. The average medical reader is hardly qualified to weigh evidence in a matter involving the composition of a complex organic ester, and is naturally disposed to attach much weight to the opinion of Sir William Pope as to the true formula of borocaine. But the facts Dr. Collins adduces in support of his thesis, and of the formula, $C_{13}H_{20}O_2N_2.5HBO_2$, which he considers represents the borate synthetised by both groups of workers, are apparently conclusive, and have already met with acceptance in America. The various claims may be summarised thus:—

—	Formula.	Percentage of boric acid (theoretical).	Melting-point (actual) Cent.
Einhorn and Uhlfelder..	$C_{13}H_{20}O_2N_2.4B(OH)_3$	50·1	160°
Copeland and Notton ..	$2(C_{13}H_{20}O_2N_2)4H_2O,5B_2O_3$	47·2	168°
Watson-Williams (E.)	—	—	166°
Collins.. ..	$C_{13}H_{20}O_2N_2.5HBO_2$.	48·2	166°

Borocaine is, we believe, protected by patent, but it is a little difficult to discover in its preparation the element of newness essential for such protection. The process of synthesis consists of mixing in solution molecular proportions of the base and the acid, an old-established method. Possibly the use of acetone as a solvent was a novelty, but that hardly seems essential for the production of ethocaine borate.

[1] Jour. Amer. Med. Assoc., Jan. 7th, 1928.

CONGRESS OF THALASSOTHERAPY.—The fifth annual international congress of thalassotherapy will be held at Bucharest and Constanza from May 21st to 29th.

A CONFERENCE ON RHEUMATIC DISEASES.—On May 10th and 11th next a conference on rheumatic diseases will be held at Bath under the presidency of Sir George Newman, Chief Medical Officer to the Ministry of Health. The conference will be divided into three sessions. The first, over which Lord Dawson presides, will deal with the social aspects of the disease; the second, presided over by Sir Humphry Rolleston, will deal with causation; and the third, presided over by Sir Farquhar Buzzard, will discuss treatment. Many leading authorities on rheumatic diseases have promised to contribute papers on various aspects of the subject, which is felt to be one upon which both the medical profession and the public require information and guidance. The hon. medical secretary of the conference is Dr. Vincent Coates, 10, The Circus, Bath, and the hon. organising secretary, Mr. John Hatton, who may be addressed at the Pump Room, Bath.

Modern Technique in Treatment

A Series of Special Articles, contributed by invitation on the Treatment of Medical and Surgical Conditions

CCLXVI.—TREATMENT OF DIVERTICULITIS OF THE COLON.

OBSERVATIONS of recent years have shown tha the occurrence of diverticula of the large intestin (" diverticulosis ") is comparatively common, and tha these diverticula become inflamed and give rise to variety of pathological and clinical conditions. Th diverticula are hernial protrusions of the mucou membrane through the muscular coat of the bowe and they may project from its peritoneal surface or ma be hidden in the fat between the layers of the mesocolo or in appendices epiploicæ; they are usually preser in large numbers and affect most commonly the pelv colon, but they may also be found with some frequenc in the descending colon and in the transverse colon t the left of the middle line.

Pathological Changes.

Diverticulitis is essentially a disease of later midd life, between the ages of 45 and 65; the condition commoner in men than in women and affects f people more often than thin. Many of the patien suffer from chronic constipation, and it is likely tha the resulting distension of the colon plays some pa in the development of the hernial protrusions. Th openings of the diverticula into the lumen of the bow are very small, and they may easily be overlooke even at a post-mortem examination.

Illness associated with the presence of diverticu is generally caused by inflammation of their walls ar of the tissues with which they are in contact. The may be retention of fæcal material in the diverticul causing spasm of the colon; infection causing sma abscesses in the wall of the bowel; or perforatic leading either to diffuse peritonitis or a localise abscess or fistula. Such fistulæ may communica with the surface of the body, with the bladder, with other parts of the bowel. In another class cases chronic inflammation leads to great thickenir and sclerosis of the affected loop of colon, close simulating carcinoma and causing partial or comple intestinal obstruction. There is some evidence suggest that carcinoma is liable to develop in segment of gut affected by chronic diverticulitis.

Varieties of Clinical Picture.

As the result of these pathological changes number of clinical pictures may be produced ar diagnosis may be difficult and delayed until a la stage of the disease, not only because the condition insidious but also because it simulates a number more common diseases. The clinical varieties mc often seen are: (*a*) attacks of subacute inflammati associated with temporary spasm of the colo (*b*) the formation of a localised abscess in the pelv or left iliac region; (*c*) the development of an extern fistula in the left iliac region; (*d*) diffuse perforati peritonitis; (*e*) involvement of the urinary bladd by adhesions, cystitis, or the formation of a vesic colic fistula; and (*f*) chronic and acute obstructi of the colon.

(*a*) *Attacks of subacute inflammation.*—The patie who perhaps has noticed an increasing tendency constipation, is seized suddenly with pain of modera severity in the left lower quadrant of the abdome referred in some cases to the perineum, groin, or pen The pain is spasmodic in character and increases severity during the first few hours; it is made wor by exercise, and particularly by jolting—a somewh characteristic symptom. The bowels are confined a the temperature rises to between 99° and 100° If the patient lies up and the bowels are cleared t first attack will, as a rule, subside within a week a leave him apparently in his usual good health.

Palpation of the abdomen in the early stages the attack will reveal tenderness and possibly slig rigidity above the pubes just to the left of the midc

line. On bimanual examination a tumour can be felt, usually about the size of a small orange, high in the pelvis, and sufficiently movable to allow of its being pushed down on to the finger in the rectum; it is tender to the touch below as well as above. Active movements of the hip may elicit pain. If the attack subsides without the formation of an abscess the tumour gradually shrinks and usually becomes impalpable within ten days.

In the diagnosis of early cases X ray examination is often of great value. Two observations may be made: (1) A barium enema sometimes reveals a narrowing of the lumen of the gut for two or three inches in the inflamed and spasmodic area, the film even showing no barium here though the colon above and below is filled. (2) A barium meal may show numerous diverticula extending up the descending colon, which appear as small opaque areas about the size of peas, persisting after the main bulk of the barium has been evacuated. On the other hand, a negative X ray finding does not exclude diverticulitis, for the barium in the pelvic loop or rectum may mask the defect, and it is sometimes only on repeated examinations that the barium will enter the diverticula, because of the small size of their mouths, and because they may already be loaded with stiff fæcal material. Sigmoidoscopy is of little value in the diagnosis of diverticulitis, except in some cases by excluding new growth. The thickened inflamed loop does not allow the sigmoidoscope to approach it easily, and the openings of the diverticula into the bowel are so small as rarely to be visible.

During the attack the patient must be kept in bed on a light diet with plenty of fluids, and the contents of the large intestine must be liquefied as early as possible by large doses of a saline aperient; the bowel should be washed out by simple enemata, which must be given slowly and carefully, as they are apt to cause pain, and any sudden tension would be dangerous. After the attack has subsided further trouble may be warded off by the initiation of a régime which should be continued indefinitely. This has two main objects—the production of a bulky food residue in the colon and at the same time the reduction of this residue to a liquid form, of about the same consistency as that usually present in the small intestine. For this purpose an ounce of liquid paraffin should be taken three times a day and may be expected to produce two or three loose actions of the bowel daily. Should the patient at any time become sufficiently constipated to form a hard stool he should at once take a large dose of a saline purgative so as to produce watery motions. Any carelessness in this respect is likely to be at once followed by another attack of inflammation, which may go on to the formation of an abscess. As to diet, the patient must carefully avoid all fruits which contain small seeds (and these unfortunately are the most attractive to many people), such as figs, currants, strawberries, raspberries, and gooseberries; the seeds of these are small enough to enter the tiny mouths of the diverticula and produce inflammation. The foods that produce a bulky residue and prevent spasm of the colon are to be encouraged, such as brown bread, oatmeal porridge, and vegetables.

(*b*) *Abscess formation.*—Any attack of diverticulitis may go on to perforation and the production of a localised abscess, which will usually be situated either on the left side of the pelvis or in the left iliac fossa. Such abscesses require drainage, and this will usually be followed by a temporary fæcal fistula; the operation wound of the abdominal wall may be expected to become heavily infected, and the incision therefore should as far as possible be planned to allow for this, a short oblique or transverse cut being much preferable to a vertical one.

(*c*) *Fistulæ* in the left iliac or hypogastric region not only follow the drainage of an abscess, but may open spontaneously. In such cases a transverse colostomy will usually be necessary, but sometimes it is possible to short-circuit the affected segment of colon.

(*d*) *Acute diffuse peritonitis* from the perforation of a diverticulum or the rupture of a peri-diverticular abscess is the most dangerous complication of the disease, for the patients collapse rapidly from the severity of the toxæmia. They are not able to withstand a prolonged operation, and gas-oxygen and local anæsthesia are strongly indicated. The peritoneum must be drained, and, if the patient's condition will allow, it is advantageous at the same time to perform a colostomy above the site of the perforation.

(*e*) *Vesical complications.*—Diverticulitis of the pelvic colon not uncommonly involves the bladder, adhesions between the two viscera and the migration of bacteria from the colon causing chronic cystitis, with pyuria and frequency of micturition, and acute exacerbations from time to time; considerable general debility and cachexia are usual. In such cases the intestinal symptoms and signs may very easily be masked by the more obvious urinary ones, but a careful bimanual examination is likely to reveal the presence of the typical inflammatory tumour. If a vesico-colic fistula forms the patient will pass fæcal material per urethram, and his condition will rapidly deteriorate; cystoscopy is made difficult by the heavy infection of the bladder, but it may be possible to see the fistulous opening in its wall and to distinguish it from a malignant fistula by its more clean-cut edge. Where there is merely intermittent cystitis from adhesions this may be cleared up by initiating the régime of diet and aperients laid down above and by the administration of urinary antiseptics. For a vesico-colic fistula a colostomy should be performed.

(*f*) *Chronic and acute obstruction* resulting from diverticulitis are often indistinguishable from the forms due to new growths, and it has in fact been shown that a number of tumours due to diverticulitis have been excised in the belief that they were cancers of the colon. A diagnosis of diverticulitis as the cause of chronic obstruction—with diarrhœa, alternating constipation and diarrhœa, or constipation alone—may be suggested by a history of attacks of recurrent spasm and inflammation over a period of years. The symptoms of actual obstruction may be of longer standing than would be likely in a case of carcinoma; there is less cachexia, bleeding is less common, and a tumour is more often to be felt, slightly tender, movable, and usually as big as an orange. The presence of so large a mass without fixation would be strongly in favour of diverticulitis as against new growth. The treatment of such a case is to short-circuit the site of obstruction, if it is sufficiently high to allow this; for instance, for obstructive diverticulitis of the left half of the transverse colon the proximal part of the transverse colon may be joined up to the pelvic loop, and for obstruction at the upper part of the pelvic colon the transverse colon may be anastomosed to the lower part of the pelvic colon. If, as is often the case, the inflammatory mass is too low to allow of a short-circuit, a colostomy must be performed.

When diverticulitis causes acute obstruction the symptoms are those typical of obstruction of the large intestine; there is much distension, late vomiting, and the cæcum is palpable when in peristalsis, whilst it may be possible to feel the mass formed by the inflamed loop of bowel. For such patients a colostomy will usually be necessary, but occasionally they are fit enough to stand a short-circuiting operation; in this case it is advisable as a precaution to perform a temporary cæcostomy at the same time.

Fortunately, after drainage of the colon above a mass due to diverticulitis the lumen of the bowel at the site of the obstruction tends gradually to be restored, and a vesico-colic fistula will close; so that in some instances it is possible later on to close the colostomy. The bowel does not usually recover its lumen in less than three years, and in deciding whether the time has come to close the colostomy an X ray examination will, of course, be of great help. After such an operation the patient must carry on the régime described for early cases.

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Special Articles.

LIVER EXTRACT FOR THE TREATMENT OF PERNICIOUS ANÆMIA.

(Preliminary Report by the Medical Research Council.)

THE treatment of pernicious anæmia by addition of liver to the diet, introduced in America by Minot and Murphy, has already been widely adopted with encouraging results. An important development of this has recently become possible through the successful preparation, by Cohn and others, of an extract of liver containing in small bulk the unknown factor which produces the ameliorating effect. The treatment is thereby made available for patients who cannot tolerate the large daily consumption of liver itself.

Source of the Extract.

In the past autumn, through the courtesy of the Pernicious Anæmia Committee of Harvard Medical School, the Medical Research Council received information about this method of preparing liver extract, and were invited to make trial of it with a view to assisting introduction of the treatment in this country. On the basis of this information experimental work was undertaken in the Council's laboratories at the National Institute for Medical Research, and a modification of the American process was found, through the coöperation of Prof. F. R. Fraser, of St. Bartholomew's Hospital, to yield a satisfactory extract. To increase the scope of the work the Council then invited the coöperation of manufacturing firms likely to be interested, and arrangements were made for clinical trials of the preparations thus obtained in adequate quantity.

Supplies of liver extract made on a manufacturing scale by the modified process were received from the Boots Pure Drug Co., from the British Drug Houses, Ltd., and from Messrs. Burroughs Wellcome and Co.

It is at present impossible to gauge the therapeutic effects of liver extracts in pernicious anæmia by any other method than that of direct trial upon human patients. The extracts supplied by the three firms were therefore distributed widely to various hospitals, and clinical reports upon the activity of the several preparations have been received from the following physicians: Dr. John Cowan, Glasgow; Dr. S. P. Davidson, Edinburgh; Prof. E. C. Dodds, Middlesex Hospital; Prof. T. R. Elliott, University College Hospital, London; Prof. A. W. M. Ellis, London Hospital; Sir Thomas Houston, Belfast; Prof. W. E. Hume, Newcastle-on-Tyne; and Prof. E. Mellanby, Sheffield. To these, and the colleagues who have been associated with them in this work, the Council are much indebted.

Results in 34 Cases.

A total of 34 apparently clear cases of the disease came under treatment. The object of the trials was to test the activity of each extract as rapidly as possible rather than to watch the results over a long period of time. For this purpose the early increase in the count of reticulocytes, the young red cells with special staining properties, was adopted, as it had been found to be satisfactory in the American work. This rise is usually associated with clear sensations of improvement on the part of the patient, and it is succeeded by a progressive increase in the general red cell count while the relative proportion of reticulocytes diminishes.

Out of the 34 cases all but two showed a good response. In 23 of these the conditions were such that other reasons for the improvement than the administration of the extract were clearly excluded. In the remaining nine the response during treatment was n less marked, but the possibility of natural remission or of the influence of other treatments, such a previous administration of fresh liver, rendered th conclusion less certain. The daily dose of extrac corresponding to half a pound or 250 g. of live generally brought a clear rise in reticulocytes, cu minating about the twelfth or fifteenth day; doubl that amount daily excited an earlier reaction, with maximum as early as the fifth day. As illustratin the remoter benefit in a case that had been treate with only the smaller doses, but over a longer perioc the total red cell count rose from 750,000 to 5,000,00 in 34 days.

These effects are identical with those obtained wit liver itself, although the effect of a given dose of th extract is not so great as that of the quantity of live from which it is derived. Time has not yet permitte an estimate of any possible deterioration of the extrac on keeping.

Suggested Line of Further Progress.

These preliminary reports enable the Medica Research Council to state that the preparation submitted have been found to be satisfactory. Th process used in making these extracts has not neces sarily any peculiar value as compared with possibl alternatives, but it is one capable of ready applicatio on a large scale. The Council believe that furthe progress will be best facilitated if extracts of the typ which they have investigated are now made available along with any others introduced apart from th Council's action, to the medical profession in genera

It is understood that supplies of these liver extract will at once be obtainable, through the usual com mercial channels, from the firms already named. Th Council are not themselves able to deal with an applications for the material.

MEDICINE AND THE LAW.

Encephalitis Lethargica.

Is encephalitis lethargica a disease of which th incidence is attributable to lowered vitality? Is i more likely to attack a patient whose general powe of resistance to disease has been lowered? If so, i might be an additional ground for awarding damage in an action arising out of injuries due to a motorin or railway accident. It has, in fact, been made th basis of a claim last month under the Workmen Compensation Act, but if it were to be regarded a among the natural sequelæ of lowered vitality, i might figure in many other kinds of claim and insuranc companies would find their commitments correspond ingly increased. On Feb. 15th a collier, aged 25, wh had been injured in a mine and had subsequentl suffered from encephalitis lethargica, claimed com pensation in the Wrexham County Court from hi employers on the ground that the latter disease coul be regarded as part of his "accident" arising out of hi employment since the injuries for which his employer admittedly had to compensate him had lowered hi power of resistance. Medical evidence was given i support of his claim, but Judge Roberts (who had th assistance of Dr. Geoffrey Williams, of Wrexham, a medical referee) did not regard the claim as based upo a sound medical foundation. Dr. H. Cohen, o Liverpool, a witness called by the employers, state that he had knowledge of 1200 cases of sleepy sickness and that in no single case was the onset of the disease attributable to lowered vitality. The disease, he said attacked people without regard to their state o health.

Hygiene in Barber's Shop.

A plaintiff has been awarded £150 damages an costs against a South Tottenham hairdresser fo what the jury has found to be negligence on th part of the defendant. The plaintiff had his hai cut and, in the final trimming of the hair above th

ears with a razor, the barber's assistant cut the skin. Two days later the plaintiff's face began to swell and presently it was found that he was suffering from erysipelas and septic poisoning. He said the sponge used on his face was kept in the basin opposite his chair; so far as he could see, the materials were not sterilised; the razor was not placed in hot water but was merely stropped. A hairdresser employed by the defendant described the practice in the shop as follows. As soon as a customer had gone the instruments were dipped into a disinfectant fluid, and were then wiped and put aside for the next customer; sponges, after being dipped in the disinfectant, were rinsed; cuts were dealt with by sponging the wound and applying an antiseptic stick, which had previously been dipped in the disinfectant. Evidently the jury considered that this hygienic ritual had not been fully observed when the plaintiff was injured, or that it was inadequate. Dr. M. J. Cronin, who had attended the plaintiff, said it was a fair inference to attribute the erysipelas from which the plaintiff suffered to the way in which the cut had been treated. As a matter of law a hairdresser, cutting a customer's hair for money, must, of course, use proper skill in his calling; he must also see that his materials and treatment are antiseptic. Such a verdict will direct the attention of barbers to their liability.

Ordeals of Jury Service.

While a medical witness was giving evidence in a murder trial at Derby Assizes the other day a juryman collapsed and was removed in a fainting condition. The witness had been identifying a carving knife which he found stuck in the victim's throat. After some delay a doctor returned to court and stated that the juror had been upset by the ghastly details. "Tell him to bear in mind," said Mr. Justice Hawke, "that even more detailed description of what occurred as still to be given; the strain will come later." After a further adjournment the doctor informed the judge that it would be unwise for the juror to resume his duties. Under recent legislation there is power to continue a trial in the circumstances notwithstanding a juror's illness provided that both the prosecution and the defence agree to this course. Apparently there was no such agreement, for a new juryman was taken in, the whole jury was sworn afresh, and the case recommenced.

There must be many jurors to whom the task of listening to unpleasant details is physically repugnant and nauseating. The nature of the evidence is a ground on which a woman juror has a statutory right to apply to be excused from jury service. The words refer perhaps rather to reasons of delicacy in relation to sexual matters, but they would cover any case of an unpleasant or disgusting nature. When summoned to attend a court as a juror, nobody can tell beforehand what the cases will be about. Would a male juror, if of highly-strung temperament or neurasthenic type, be entitled to exemption from jury service on medical grounds? Or must he do his duty at the risk of collapse? The viewing of a dead body by a coroner's jury is an ordeal which is no longer indispensable. Under Section 14 of the Coroners (Amendment) Act of 1926 the coroner himself must view the body but the jury need not do so unless the coroner so directs or the majority of the jury so desire. This change in the law was advocated by the late Sir Mackenzie Chalmers, who was for many years chairman of the Coroners Law Committee established by the Home Office. He personally attended inquests and watched the conduct of jurors when viewing the corpse. The better class of jurors, he averred, evaded their duty of looking at the body while the more morbid-minded gazed their fill. Though there have been indications that not all coroners approve the relaxation of the jurors' duty to view, this amendment of the law should mean that in practice the jury will be spared the ordeal of the view unless there are wounds, the sight of which might help to determine an uncertainty as to whether they were self-inflicted or not.

ROYAL INSTITUTE OF PUBLIC HEALTH.

The Present State of the Care of the Insane and the Mentally Defective.

Sir Frederick Willis took the chair on Feb. 29th, when Sir Robert Armstrong-Jones, Lord Chancellor's Visitor in Lunacy, delivered a lecture on this subject. The present conditions, he said, were unsatisfactory for both classes. The insane, owing to the relative lack of provision for voluntary treatment, came under certificate too soon; the mental defective was certified too late, as there were no places available to receive him. There was one law for the rich and another for the poor; the rich man who cared to be treated as a voluntary patient could go in and out as he liked, but the poor man had to wait until he was certified, and had to wait longer before he could get out. These, with other differences, constituted an injustice to democracy, and the present distrust of the system had resulted in the appointment of a Royal Commission, whose report went a long way to reassure the public mind, but left something to be desired in its suggestions for reform.

Need for Voluntary Treatment.

The exclusion of voluntary patients from public asylums was an anomaly. One of the great points urged in the report had been the necessity for the earliest possible treatment of all mental patients The recovery-rate for all cases was 40–50 per cent., and after early treatment it was 70 per cent., if all forms of threatening insanity were included. Many large teaching hospitals maintained psychiatrical out-patient departments, but a very large proportion of patients required ward treatment. For every certified patient there was one on the borderline, ready to be precipitated into the certified and probably permanent group if treatment were delayed. Insanity cost the country over £20,000,000 a year, and its prevention depended on early treatment. The Royal Commission had stated that certification should be the last resort, and not the pre-requisite of treatment, and had recommended that voluntary patients should be admitted into general hospitals, nursing homes, and private care.

The "Non-Voluntary" Patient.

It was, however, a serious defect in the report that it did not allow for a "non-voluntary" class of patients as well as a voluntary and an involuntary class. The will-power of a mental patient often became so malleable that it would readily yield to a superior will against the best interests of the patient and his friends; the patient was then non-volitional. but not involuntary. It was therefore important that the Board of Control should not only have cognisance of all voluntary patients, but should be able to have immediate access to them and should inspect the conditions under which they resided. The number of voluntary patients was now 1127, and if the voluntary system became general the total would probably reach 20,000. The Commission had put forward the "Provisional Treatment Order" as a means of bringing the non-volitional patient under treatment, but the three visits from a justice within one year might be prejudicial to the patient and should be made discretionary. Another defect of the Order was the stress it laid on prognosis, always a very uncertain factor.

Recent law suits had made it obvious that the certifying medical man needed protection from litigation, and the public from the consequences of a wholesale reluctance by the profession to certify any case. The Commission had proposed that the onus of proof of bad faith or lack of reasonable care should be placed upon the plaintiff, but it was doubtful whether this would afford sufficient protection.

Importance of Prevention.

The Chairman said that seven years' chairmanship of the Board of Control had impressed him with the

fact that the mental health of the nation was not improving. The increase was 2500 to 3000 cases a year, and the incidence- and recovery-rate had been stationary for 30 years. The general health, on the contrary, had greatly improved, and the expectation of life had increased. He realised that it was impossible to dogmatise on this question, but every doctor with whom he had discussed it had said that they had a much better chance of curing a patient if they took him in an early stage. The present law absolutely discouraged the treatment of the great mass of the mentally ill of this country until they became so bad that a doctor certified them as proper persons to be locked up. Until they got to this stage the public authority could not spend a penny on their treatment. The authorities concerned had chafed for years at that restriction, but the lethargy of public opinion had prevented anything from being done. The Royal Commission had reported two years ago, but Parliament had taken no action. Even the rich person, as the law stood, could only go as a voluntary patient to a very limited number of places. If the law were altered it was to be hoped that the number of voluntary patients would be even greater than that suggested by Sir Robert Armstrong-Jones. In spite of this increase the expense to the country would be diminished, since, owing to early treatment, a much smaller number would eventually become insane.

BERLIN.

(FROM OUR OWN CORRESPONDENT.)

Revival of the Cautery.

Prof. August Bier's recent address at the Berlin Medical Society has caused almost as much sensation as the one on homœopathy which he read a year or two ago. He began by pointing out that Hippocrates regarded the cautery-iron as the most powerful remedy in existence, and his main thesis was that its use should not have been abandoned as it is to-day. The unpopularity of the cautery he ascribes to the fact that it produces ulcers which heal slowly and leave ugly scars, and he therefore recommends that not the skin, but the subcutaneous tissue should be burnt; for this purpose he cuts a flap, raises it, and applies the cautery beneath the skin, later closing the flap by suture. The results of this technique, he said, are excellent, and the wounds heal with insignificant cicatrices.

The red-hot iron is especially useful, he considers, in combating infection. In cellulitis, for instance, after having removed any necrotic tissue, he applies the cautery to destroy bacteria, and then closes the wound with loose sutures. This treatment is said to have checked the progress of cellulitis in all the 222 cases in which he has tried it. One of the results of the operation is a considerable rise of temperature, but this falls again soon afterwards as a result of profuse sweating, and the patient's general condition soon becomes normal again. In the wound itself there is generally a high degree of inflammation with serous and afterwards purulent discharge. After describing the use of the cautery in a number of other surgical conditions, he gave an interesting account of results obtained in medical cases in which a bacterial focus of disease is not directly accessible. In 12 cases of endocarditis lenta sent to him by physicians he made a large flap of skin over the left costal arch and cauterised the subcutaneous tissue; seven of the patients were cured and five died. He concluded his address by stating emphatically that fever and inflammation are powerful remedies which should only be combated when they are excessive, and may well be *induced* in chronic diseases where they are absent. In this connexion he alluded to the use of malaria to cure G.P.I. For many years Director of the Surgical Clinic of the University, Prof. Bier is very popular with the profession in Berlin and he was listened to with the greatest interest by a large audience, although many of its members remained somewhat sceptical.

Salvarsan in Late Syphilis.

The German Dermatological Society has promoted an inquiry into the question whether salvarsan therapy favours development of the so-called meta syphilitic symptoms and of aortitis, as claimed by some authorities. With this object they have sen the following declaration to 130 eminent German and foreign specialists for criticism and comment.

There is no statistical evidence that the increase o paralysis in civilised countries has any connexion with th administration of salvarsan, and the same is true of aortitis The supposition that cases in which less vigorous treatmen has been administered are not so liable to metasyphilis i unfounded. Salvarsan, if cautiously administered, i harmless, and the medical profession should prescrib salvarsan, bismuth, and mercury at an early stage of th disease without regard to unfounded theories.

Of the 130 persons to whom this declaration wa sent, 120 returned it with an expression of agreement Four did not concur in parts of the statement, whils six did not reply at all.

The Campaign against Rheumatism.

The German Association for Combating Rheuma tism, founded a year ago, has just held a meeting i Oeynhausen, the renowned brine spa in Westphalia The secretary reported that special departments fo the study of rheumatism have been established in th hospitals of Aix-la-Chapelle and Wiesbaden and in th university clinics of Berlin and of Leipzig. Th delegate of the Government Health Department, Pro Martinek, stated that rheumatism, though it doe not endanger their lives, incapacitates a greate number of workmen than tuberculosis and involve large public expenditure for their maintenance. Th Government is considering, he said, whether the car provided by the sanitary authorities for tuberculosis venereal diseases, and crippling should not be extende to rheumatic diseases. Prof. H. Curschmann (Rostock spoke on the so-called induration of muscles, whic he believed to be a colloidal change, whilst Pro Müller (Munich) held that it was due to muscula contraction. Dr. J. van Breemen (Amsterdam proposed an international nomenclature for rheumati disorders, and this question was left to a specia committee which will have to submit proposals a the next meeting.

The first trial under the Prevention of Venere Diseases Act took place in Munich on Dec. 31st, whe a syphilitic man was found guilty of having ha intercourse with a woman and infecting her, whil aware that he suffered from the disease. He wa sentenced to one month's imprisonment, but wa discharged on probation.

The German Colonial Society is asking the Foreig Office to propose to the League of Nations tha medical men should be allowed to practise in countri belonging to the League without having to take speci examinations. In some of the mandated territorie it is said, there is a considerable shortage of medic men, which is prejudicial to the health of the nativ population, as is shown by an increase of sleepin sickness, tuberculosis, and malaria. The admission o qualified medical practitioners ought not to b restricted by the Mandatory Powers.

EXTENSION OF SUNDERLAND INFIRMARY.—Recentl an extension of this institution, to be called the Prince Mary Wing, was formally opened. It consists of a thre storey building with 95 beds and has cost £36,000.

WORKPEOPLE'S HOSPITAL FUNDS.—In the si months since its inception 65,000 workpeople have join the Liverpool penny-in-the-pound scheme. Last year th Leeds Workpeople's Hospital Fund raised £43,547, a increase of over £3000 upon the preceding year. One-fif of the population of the city contributes, and the cost administration has been reduced from 10 per cent. at whi it stood a few years ago, to 3½ per cent. The motor acciden admitted to the Leeds General Infirmary have risen fro 758 in 1925 to 1028 in 1927.

Public Health Services.

LOCAL AUTHORITIES AND SANITARY SCIENCE.

THE evidence submitted by the Ministry of Health and other Government departments before the Royal Commission on Local Government has now been published.[1] The Minister of Health submitted a memorandum and Sir W. Arthur Robinson, secretary, and Mr. E. R. Forber, deputy secretary, attended to give evidence. The Minister made it clear that his object was to put forward the weak points in the present system and to leave it to the Commission to devise remedies. The local authorities comprise 83 county borough councils, 62 county councils, and 686 councils of county districts, which include 255 non-county borough councils, 785 urban district councils, and 646 rural district councils. The evidence submitted largely deals with the capacity of the 686 councils of county districts to carry out the duties placed upon them by the many legislative enactments enacted between 1875 and 1926, a list of which is given. Statements taken from the 1923 survey reports of the medical officers of health of 35 urban areas (non-county boroughs and urban districts) and 37 rural districts are submitted as illustrations of the failure of certain councils to discharge their functions. The statements are purposely given without naming the districts. Among the 35 urban areas the chief failures have been with regard to water-supply, sewerage, sewage disposal, the provision of proper sanitary conveniences, and adequate scavenging. Among the 37 rural districts the failures have been somewhat similar, but the absence of proper scavenging assumes a more prominent place. It is pointed out that the number of statements are not to be regarded as percentages but only as illustrations. The memorandum goes on to discuss the reasons why medical officers of health should generally devote their whole time to public duties; why it is undesirable that a sanitary inspector should also act as surveyor; and the existing rate of progress towards the employment of medical officers of health and sanitary inspectors on proper terms. It is shown that in 1873 the proportion of whole-time medical officers of health was about one-quarter, and that now it is slightly over one-third. A statement in the appendix further shows that of the 1686 councils of county districts 120 (or 7 per cent.) have a whole-time M.O.H. of their own, while 385 (or 23 per cent.) have a whole-time M.O.H. jointly with other authorities, and 1181 (or 70 per cent.) have a part-time M.O.H., who is also engaged in private practice.

Infectious Hospitals.—Water-supply.

In spite of the legal provisions which allow the councils of small districts to combine for providing efficient hospitals for infectious diseases, there is much failure in this respect. The complicated and overlapping nature of the duties of the councils of county districts and county councils with regard to maternity and child welfare schemes, the supervision of midwives, the notification of births, the prevention of damage from ophthalmia neonatorum, the school medical service, and the prevention of tuberculosis are described.

The question of determining whether the disability of the council of a county district is due to restricted financial resources or to want of interest is acknowledged to be a difficult one, but it is pointed out that suitable candidates will not emerge from a population below a certain size. On March 31st, 1927, the Minister had not received the 1925 "survey" reports from 69 of the 1686 county districts, and the defaulters included five boroughs, and 32 urban and 32 rural districts.

It is laid down as a paramount principle that local self-government must be encouraged. The difficulties in the way of action by a county council in default of the district council are fully considered. The special need for joint action between the local authorities in district planning and water-supply are pointed out.

It is shown in the report that up to the present there are only two regional advisory committees for water-supplies, one for S.W. Lancashire and the other for the Sherwood area of Nottingham, where it is necessary to consider the proper allocation of the underground water obtainable from the Bunter sandstone. These regional committees are not in any sense a joint water authority, but have purely advisory functions, and serve as a neutral ground where divergent interests can be amicably adjusted.

The report comments on the desirability of considering whether the distinction between the status and functions of the councils of non-county boroughs and urban districts and also between the councils of urban and rural districts should be maintained or not.

In the evidence submitted on behalf of the Home Office it was pointed out that the enforcement of the provisions for the sanitary conditions of workshops are thrown upon the local authorities, and that while the law is fairly efficiently administered in the larger boroughs and urban districts, it is reported by the factory inspectors to be inefficiently administered in many of the small boroughs and urban districts and in most of the rural districts.

Agricultural Problems.

On behalf of the Ministry of Agriculture it was pointed out that 124 non-county borough councils, in addition to the county councils and county borough councils, deal with the Diseases of Animals Acts, and that there is a diversity of interests between urban and rural areas. The former are more interested in having a free meat market, the latter in the health of the stock. A suggested remedy is the formation of joint committees for the geographical counties, which shall include representatives of the county council and all the other local authorities. The Ministry of Agriculture favours the appointment of whole-time veterinary inspectors, but the County Councils Association in October, 1925, passed a resolution that each county authority should decide for itself whether its circumstances required the services of a whole-time veterinary inspector or not.

The Ministry of Agriculture memorandum mentioned the duties thrown on local authorities by the Rats and Mice (Destruction) Act, 1919, but Sir Francis Floud in his evidence did not seem to think that the Act had effected any very marked reduction in the number of rats and mice, or that the powers given to local authorities to destroy the rats and charge the owners with the cost were often exercised. The memorandum also showed that there is much diversity in the provision made by county councils and county borough councils for agricultural education, and Bedford and Huntingdon were mentioned as striking examples of agricultural counties, which did little or nothing. In the Ministry's view every county with real agricultural interests should have a whole-time agricultural organiser and, as a rule, a poultry instructor, a dairy instructor, and a horticultural instructor in addition. Huntingdon has a horticultural instructor and Bedford a poultry inspector. From the point of view of clean milk and the public health an agricultural organiser and a dairy instructor are of first-rate importance.

We do not notice any mention of the duties cast upon local authorities by the shell-fish regulations, although shell-fish are now regarded as a not uncommon cause of typhoid fever.

[1] Minutes of Evidence taken before the Royal Commission on Local Government. Part IX. H.M. Stationery Office, Cadastral House, Kingsway, W.C. 1928. 6s. net.

QUEEN'S HOSPITAL FOR CHILDREN.—The report for 1927 shows that the cost of each in-patient was £3 16*s.* 1*d.* per week, and of each out-patient 5*s.* 3*d.*

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED FEB. 25TH, 1928.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 392 (last week, 369); scarlet fever, 1799; diphtheria, 1392; enteric fever, 66; pneumonia, 1604; puerperal fever, 55; puerperal pyrexia, 112; cerebro-spinal fever, 7; acute poliomyelitis, 9; acute polio-encephalitis, 3; encephalitis lethargica, 31; dysentery, 13; ophthalmia neonatorum, 109. No case of cholera, plague, or typhus fever was notified during the week.

The cases of small-pox were notified from the following 25 counties:—London, 1; Bedford, 1; Chester, 9; Derby, 11; Durham, 85; Kent, 1; Lancaster, 22; Lincoln, Parts of Holland 1, Parts of Lindsey 12; Norfolk, 3; Northumberland, 14; Nottingham, 6; Oxford, 2; Southampton, 1; Stafford, 7; Suffolk East, 6; Surrey, 1; Sussex East, 1; Warwick, 8; Worcester, 1; Yorks, North Riding 9, West Riding 78; Brecknock, 3; Glamorgan, 41; Monmouth, 68.

The number of patients at the Infectious Hospitals of the Metropolitan Asylums Board on Feb. 28th–29th was as follows:—Small-pox, 16 (1 of these being under observation); scarlet fever, 1746; diphtheria, 2624; enteric fever, 30; measles, 1436; whooping-cough, 167; puerperal fever, 13 (plus 12 babies); encephalitis lethargica, 72; poliomyelitis, 1; "other diseases," 35. At St. Margaret's Hospital there were 14 cases of marasmus and 13 babies (plus 7 mothers) with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns, including London, there was 1 death from small-pox, 1 (1) from enteric fever, 117 (66) from measles, 5 (3) from scarlet fever, 36 (6) from whooping-cough, 35 (12) from diphtheria, 51 (6) from diarrhœa and enteritis under two years, and 98 (20) from influenza. The figures in parentheses are those for London itself. Of the 51 fatal cases of measles outside London, 8 were reported from Plymouth, 7 from Sheffield, 5 each from West Ham and Manchester, and 4 from Bristol. The number of stillbirths registered during the week was 258 in the great towns, including 48 in London. The death from small-pox belonged to Bradford C.B.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Comdr. J. A. O'Flynn to *Ganges*.
Surg. Lt.-Comdr. S. R. Johnston to *Dauntless*.

ROYAL ARMY MEDICAL CORPS.

Lt.-Col. J. F. Whelan, having attained the age fixed for compulsory retirement, retires on retd. pay.

Maj. E. C. Stoney retires with a gratuity.

Maj. R. O'Kelly, half-pay list, late R.A.M.C., retires on retd. pay on account of ill-health caused by wounds.

The undermentioned Capts. to be Majs.: D. Crellin (Prov.) and T. P. Buist.

Capt. (Prov. Maj.) C. H. G. Penny retires, receiving a gratuity, and relinquishes the rank of Prov. Maj.

Lt. J. G. Weston, from R.A.M.C., T.A., to be Lt. on prob.

Temp. Lt. R. Reynolds relinquishes his commn.

The undermentioned Lts. (on prob.) are confirmed in their rank: E. W. Hayward, M. F. N. Griffin, J. J. O'Dwyer, H. A. Ferguson, de L. Carey, M. G. de L'I. Sturm, and D. B. O'Sullivan-Beare.

G. L. Grieve and H. S. Littlepage to be Temp. Lts.

W. A. R. Ross and P. V. MacGarry to be Lts. on prob. and are secd. under the provisions of Art. 205, Royal Warrant for Pay and Promotion, 1926.

TERRITORIAL ARMY.

Hon. Col. J. Griffiths vacates the appt. of Hon. Col. R.A.M.C. Units, 54th (E. Anglian) Div. T.A., on completion of tenure.

Col. G. A. Troup to be Hon. Col. R.A.M.C. Units, 54th (E. Anglian) Div., T.A.

Lt. N. W. Hammer to be Capt.

INDIAN MEDICAL SERVICE.

Lt.-Col. (Bt. Col.) A. Spitteler to be Col.

Lt.-Col. F. F. Elwes retires.

To be Capts.: F. E. B. Manning and S. Smyth.

To be Lts.: J. Quigley, R. A. Haythornthwaite, R. I Alexander and J. C. Lamont.

To be Temp. Lts.: Nanikram Chartsing Ramchandan Hasibul Hasan Khan, Eruch Ardeshir Darukhanvala an Michael Rodriques.

Temp. Capt. Debendra Chandra Majumdar relinquishe his temp. commn. and retains his rank.

COMMISSIONS IN THE ROYAL ARMY MEDICAL CORPS.

The following have been granted commissions a Lieutenants on Probation in the R.A.M.C.: C. L. Day an G. T. L. Archer (Trinity Coll., Dublin); D. R. W. Burbur (London Hosp.); P. J. L. Capon (St. Thomas's Hosp.) P. Dwyer (Glasgow Univ.); K. McNeill (Edinburgh Univ.) M. R. Burke and P. W. A. Agnew (St. George's Hosp.) J. C. Gilroy (Edinburgh Univ.); J. W. Kendall (King Coll.); W. A. R. Ross (Edinburgh Univ.); P. V. MacGarr (London Hosp.); and J. G. Weston (Guy's Hosp.).

DEATHS IN THE SERVICES.

Sir Robert Porter, whose death was announced in th column in our last issue, was the son of Mr. Andre Porter, and was born in Donegal in 1858. He w educated at Foyle College, Londonderry, in Paris, ar at Glasgow University, where he graduated in medici and surgery in 1879. In 1881 he entered the Roy Army Medical Corps and saw service with the Ashan Expedition of 1895–96, and was present at the capture Kumasi. He also took part in the South African war ar was awarded for his services two medals and seven clasp In the late war, as Director of Medical Services of th Second Army in France, from its formation in 1914 unt its dispersion in July, 1917, he at one time had over 12 medical officers under his administrative control, includir the medical services and 28 divisions, corps troops ar army troops, 13 casualty clearing stations, 3 mobile labor tories, 14 sanitary sections and 5 army schools of sanit tion—a vast organisation which he had himself built u The Second Army numbered over 800,000 men at th Battle of Passchendaele, and was probably the large individual army of modern times; it was employed in th region of Ypres, and received the first gas attack. He w mentioned six times in despatches, was created C.B. in 191 C.M.G. in 1919, and K.C.B. in 1921. He was a Command of the Order of the Crown and he held the Croix de Guer both Belgian honours. He married in 1903 Mary, daught of the late Mr. John Johnston, of Barnard Castle, w survives him with three sons.

NATIONAL HOSPITAL, QUEEN-SQUARE.—The annu general meeting will be held at the hospital on Tuesda March 27th, at 4.30 P.M.

COLLEGE OF NURSING: APPLICATION FOR CHARTER.—A petition of the College of Nursing, Ltd., f a Royal Charter was heard on Feb. 29th by a Committ of the Privy Council consisting of Lord Warrington Clyffe, Sir Maurice de Bunsen, and the Lord Advocat On behalf of the College Mr. R. Mitchell Banks stated th the College, which was incorporated in March, 1916, h been founded to promote the better education and trainir of nurses and the advancement of nursing as a professio and was precluded from applying its funds for profit earnir The membership at present stood at 26,300, admission membership being limited to those entitled to have th names on the State Register, and the College did n propose to compete with or set up any substitute for t General Nursing Council. The College possessed lecture ha and laboratories and was in a sound financial position, anonymous donor having subscribed £100,000. Oppositi came from the Royal British Nursing Association, t Scottish Nurses' Association, the Poor-Law Officers' Unic and the Association of Hospital Matrons. Mr. Gav Simonds put the case on behalf of the opposing bodi submitting that the College had not performed su signal services as would justify the granting of a chart After hearing the arguments Lord Warrington sa that the Committee would report in favour of the Colleg the draft charter, however, would require amendme particulars of which would be communicated in d course.

Correspondence.

"Audi alteram partem."

THE POSITION OF THE VOLUNTARY HOSPITALS.

To the Editor of THE LANCET.

SIR,—The correspondence in your columns on the voluntary hospitals has led me to consider the hospital situation as it exists to-day in my home city, and to ask myself what really—sentiment apart—there may be in the voluntary system to make us desire its continued existence.

A modern voluntary hospital may be likened to a garage for the reception of damaged human automobiles, equipped with a sufficient staff of skilled artificers whose aim it is to investigate the defects of the damaged human beings and to make as many as possible of them "fit for the road" again. As methods of investigation and treatment have been more and more elaborated it has been found necessary to add to the number of the artificers. At the Bradford Royal Infirmary with 210 beds there is to-day a visiting staff (not including honorary anæsthetists) of 17, or one for every dozen patients.

The usual poor-law hospital has never been staffed on these lines. On the outskirts of Bradford to-day there is a large poor-law hospital—a modern building with excellent wards containing several hundred beds. The medical staff consists of a solitary general practicioner who adds the medical charge of the hospital patients to his family practice. And consequently investigation and active treatment cannot be carried out in such hospitals, whose inmates are either derelicts or such as chiefly require nursing care. Public bodies have been for a good many years past gradually waking up to the need for, at any rate, an approximation to the ideal of fitting the damaged automobile for the road again. Early in this century the Bradford board of guardians changed the title of their hospital from poor-law hospital to St. Luke's Hospital. And they were fortunate enough to secure as medical superintendent a man with surgical experience gained in more than one large voluntary hospital. This surgeon, being also an able administrator and a glutton for work," was able, with the aid of two resident medical officers, to do a considerable amount of "refitting" work for his patients. The result was the raising of St. Luke's Hospital's status much above that of all but a very few poor-law hospitals in the country. The hospital during the war was handed over to the War Office and its bed accommodation largely increased. After the war it was leased to the City Council and became the first municipal hospital in this country, a hospital which is now doing an immense amount of excellent refitting work.

I desire shortly to compare and contrast the (voluntary) Bradford Royal Infirmary with the (municipal) St. Luke's Hospital in order to discover whether the one is in any way capable of giving superior service to the community to the other. The efficiency of a repairing garage must depend upon (1) a sufficient supply of skilled artificers, (2) adequate opportunities for the training of these artificers, and (3) a management willing to and capable of providing the plant and appliances necessary for the work.

(1) As regards staff, at the infirmary there is a visiting medical staff of specialists in the ratio of 1 to 12 or 13 patients; at St. Luke's Hospital the medical staff (excluding residents) is 1 for every 50 to 60 patients.

(2) As at voluntary hospitals generally there is what may be termed an apprenticeship system in force at the infirmary. Before I was appointed to the charge of inpatients I had served as a resident for three years and as an honorary assistant surgeon for seven years. There is no assistant staff at St. Luke's Hospital and (resembling, I believe, in this respect all public authority general hospitals) that post-graduate experience has been gained by the various members of its staff has been obtained at the voluntary hospitals. The desirability of such training does not appear to have been realised and no provision for it has been made.

(3) But the chief difference between the two hospitals is in the lay managements and their relations to the medical staffs. In the voluntary hospital every member of the board may be assumed to be an interested sympathiser, since he or she has voluntarily accepted the duties of the office. The board meetings are held on the infirmary premises; the house committee meets there each week and at each of these weekly meetings there are not only members of the medical staff present, but the matron and the senior resident officer attend at the end of each meeting and are given the opportunity of bringing up for discussion any matter which either of them may desire to ventilate.

The governing body of St. Luke's Hospital is the City Council's Health Committee, and the affairs of the hospital appear as one item on a long agenda at meetings which are never held at the hospital. I have it on the authority of another corporation chairman of committee that only the chairman and deputy chairman of any committee are ever in a position to be au fait with the details of its departmental business. And I am very certain that most of the members of the Bradford Health Committee have never been even once "round the St. Luke's Hospital."

Moreover, the notion (one which underlies not a little of industrial unrest) that no paid member of a staff has any right to a say in the management, operates so that the members of the St. Luke's visiting staff are never consulted—never have any opportunity to confer with the health committee, and so are not in a position to guide these laymen with regard to what is required to keep the hospital "up to date."

The critics of the voluntary hospitals make the financial difficulty the burden of their cry. And in theory, with the city rates available, the City Hospital should be in a vastly superior position for providing the increasingly costly additional accommodation and equipment. But what has actually occurred in Bradford? Since 1921 the board of the Bradford Royal Infirmary has not only raised over £200,000 towards the cost of a new infirmary, but has built a nurses' home costing £30,000 and spent over £5000 on extension of the X ray department and nearly £1000 on extensions of the pathological and massage departments. Whereas, quite a number of improvements have been greatly needed at St. Luke's Hospital, which no party in the City Council dares to advocate because to carry out the work would inevitably require an addition to the rates.

And so my survey of the hospital situation in Bradford leads me very definitely to the conclusion that, whatever theorists may say, at present, in this city at any rate, the voluntary hospital as compared with the municipal hospital has (1) a relatively bigger staff (whose members are consequently able to devote more individual attention to their patients), (2) greater opportunities for the junior members of the staff to receive supervised training and experience, and (3) a board of management probably much more intensely interested in the work of the hospital and certainly much better able to supply the wherewithal required for institutional treatment.

Finally, I would again lay emphasis on the point that it is infinitely more easy to convince a small body of interested people of the need for expenditure on improvements and extensions than it is to persuade the members of an elected public body (however convinced they may be of the value of the suggested outlay) to risk their seats by voting for an increase in the rates.

I am, Sir, yours faithfully,

Bradford, Feb. 28th, 1928. JAMES PHILLIPS.

THE TREATMENT OF BURNS BY TANNIC ACID.

To the Editor of THE LANCET.

SIR,—I was interested to read in your issue of Feb. 18th (p. 336) the remarks of Dr. R. M. Gordon on the Treatment of Burns by Tannic Acid and also the annotation on that subject. I should like to stress the value of this method of treatment, which to my mind is far the most important advance as yet made in the treatment of burns and scalds. I am only surprised that the method is not more widely used, for not only is it definitely a life-saving measure, at any rate in

children, but the resulting scar is superior to that produced by any other form of dressing, while the method of application is comparatively simple.

Since the publication of the excellent article by E. C. Davidson [1] in August, 1925, I have used this method in my department of the Royal Edinburgh Hospital for Sick Children, and I have personally dealt with 38 cases of burns and scalds in young children. I will not enumerate here the many advantages that I have noticed in comparing tannic acid to such applications as picric acid, ambrine, adrenalin soaks, saline baths, and so forth, which I had used formerly, but I should like to draw attention to the very marked improvement in the death-rate. J. Fraser, working in the same hospital, quotes a death-rate of 38·7 per cent. for all cases, while during the last two and a half years I have lost only three patients in 38 cases—a case-mortality of 7·9 per cent. —and from the experience of six years previous to the introduction of this method I can assert that there has been little difference in the severity of the cases admitted, both as regards surface area and depth. In addition, the length of stay in hospital has markedly diminished and it is rare that skin grafting is required.

As regards the actual method of application, we have gradually modified Robertson's original method and we have found the most satisfactory technique to be as follows :—

1. A hypodermic injection of heroin is given if the burn is extensive.
2. The area is cleaned with methylated spirit and blisters are snipped and removed.
3. A *freshly* prepared aqueous solution of 2·5 per cent. tannic acid is sprayed on the surface, and this is repeated hourly for about eight hours until the coagulum shows a light brown tint which is steadily deepening.
4. The child is placed in an electric cradle to keep up the body warmth and to dry the wound, which is exposed to the air without any form of dressing. It is important that if at all possible no part of the burnt area should touch the bedclothes or bed, in order to get a complete coagulum.
5. The general treatment adopted consists in slight stimulation and the forcing of fluids by mouth, rectum, and skin if necessary.

It will be found that the coagulum steadily deepens in colour until it is almost black, and in the majority of cases this will remain absolutely dry. It begins to separate at the end of a week as a rule, and has generally become completely detached in 10 to 16 days, after which any simple ointment is applied. Most cases are discharged from hospital in 10 to 14 days. The child usually is extremely comfortable and does not pass through the ordinary toxic stage so commonly met with in severe burns, and the condition rarely gives rise to any anxiety.

I am, Sir, yours faithfully,

GERTRUDE HERZFELD,
Surgeon to the Royal Edinburgh Hospital for Sick Children.

Feb. 22nd, 1928.

[1] Surgery, Gynecology, and Obstetrics, 1925, xii., 202.

THE EMPLOYMENT OF TUBERCULOUS PATIENTS.

To the Editor of THE LANCET.

SIR,—I am glad to see attention being paid to this subject. Very many patients make a conditional recovery under sanatorium treatment, but while money is spent freely in providing this, no corresponding effort is made to provide the necessary after-conditions. These include the observance of a few simple rules, home quarters modified on sanatorium lines—not necessarily expensive, though not possible everywhere—and remunerative employment, or its equivalent. Those who are lucky enough on leaving a sanatorium to find these conditions provided may live for years in health, leading useful lives ; but these form a small minority. As a rule the convalescent is again ruined in health, mainly by semi-starvation through lack of employment. Owing to the exaggerated fear of infection, which wide experience (including that of Dr. Varrier-Jones's own colony) proves to be harmless if simple precautions are observed, even sputum-negative convalescents of exceptional abilit and character are refused employment. Failin ordinary ways three others are possible : home-work special workshops under medical supervision (a advocated by the late Dr. F. S. Tinker), and tuber culosis colonies on the pattern of Papworth. Each o these has its part to play, but they all need organising The lack of them is causing a great waste of publi money and much avoidable suffering.

I am, Sir, yours faithfully,

Farnham, March 5th, 1928. F. R. WALTERS.

MENTAL BREAKDOWN IN ADOLESCENCE.

To the Editor of THE LANCET.

SIR,—In the annotation on this subject in you issue of Feb. 25th it appears to me that you fall int the very error which you say should be avoided. Th discussion at the Maudsley Hospital was on th prognosis of acute schizophrenia. You state of thos cases which recover that "to describe them a dementia præcox is misleading" and that such young person "ought not to be branded for life as dement." The remedy is obvious ; he can b designated a recovered schizophrenic. The objection to the term "dementia præcox" are many, we known, and need no recapitulation. The popular anc I take it, the usual medical connotation of the ter "dementia" implies principally an intellectua determination, and though such determinatio undoubtedly does occur in schizophrenia, it is ofte more apparent than real, and appears to be funda mentally determined by emotional causes and t depend in essence on a withdrawal of interest from th outside world. It is a commonplace of psychiatr experience to find a surprising revival of intellectua performance in the most "hopeless dement" whe suffering from an acute physical disorder.

Quite a number of puerperal (as well as many othe cases show an acute schizophrenic reaction, and y (from a social point of view) recover completely. T adopt the view that if they recover they could n have been cases of schizophrenia appears to me simpl to beg the question completely and to imply tha diagnosis in mental disease is dependent not o clinical acumen but on end-results. Admittedly, ou powers of prognosis in this disorder are poor, but th line of argument adopted in your annotation appea not only to lead nowhere—a sad but not uncomm phenomenon in psychiatric discussions—but, what far more serious, to deny the facts of observation.

I am, Sir, yours faithfully,

J. B. STRAFFORD LEWIS.

Colney Hatch Mental Hospital, New Southgate, March 2nd, 1928.

CARBON DIOXIDE IN ANÆSTHESIA.

To the Editor of THE LANCET.

SIR,—May I thank Dr. Ross Mackenzie for h letter in your last issue and state that I think th freedom I have experienced from respiratory-cent anxieties during anæsthesia must be very largely d to having avoided, for many years, the use of morph as a preoperative medication, except in administr tions of gas-and-oxygen in adults.

I am, Sir, yours faithfully,

JOSEPH BIRT.

St. James's Court, S.W., March 5th, 1928.

PUERPERAL SEPSIS.

To the Editor of THE LANCET.

SIR,—Mr. Bonney's address in your last issue most valuable and instructive. I would like to poi out that the folds between the outer and inner lab should receive very special attention in order to less the chances of sepsis taking place. It is not so easy clean them in a surgical sense as it is to deal with t ano-perineal region, but they are of equal importanc A good light is imperative and undue haste should

avoided. The result of neglect is that it is only too easy for the examining finger or the forceps blade to carry infection to the upper part of the vagina with disastrous after-effects. Nurses and practitioners alike should spare no pains in their effort to secure asepsis. I am, Sir, yours faithfully,

JAMES G. MACASKIE, L.R.C.P. & S. Edin.

London, W., March 3rd, 1928.

GASTRO-DUODENAL ULCERATION.

To the Editor of THE LANCET.

SIR,—Although when I wrote my letter I had not seen Dr. Hurst's 1920 article, I am sorry he should have inferred from it that I suggested Prof. MacLean was the introducer of alkaline treatment in gastric ulcer. I could not do so. At the same time I do think the latter put the treatment clearly for the use of the practitioner and so far as I knew he was the first to do so. It would be most unfortunate should the patients be frightened off by the possibility of an alkalosis, the diagnosis of which is admittedly difficult. Dr. Hurst also mentions the danger of alkalis in slight renal inefficiencies, but if, as it would appear, he relies on a urea test to avoid that danger, then he must give alkalis to all these cases, for urea does not expose slight inefficiency. If Dr. Hurst is right in his theory of alkalosis appearing only in private cases, it is strange; mine have all been private cases. The warning of alkalosis has already had an unfortunate effect. I saw a case last week whose own doctor had advised alkali, but directed it in very tentative fashion, suggesting a fear to the patient. This treatment should be given adequately or not at all.

I am, Sir, yours faithfully,

A. J. D. CAMERON, M.B., Ch.B.

Northampton, March 5th, 1928.

To the Editor of THE LANCET.

SIR,—Dr. Hurst's letter, which appeared in your issue of March 3rd, implies that Dr. Cameron's letter published on Feb. 25th suggested that I was the first in the country to write on the intensive alkaline treatment of ulcer. There is no such suggestion in Dr. Cameron's letter. That I and my colleagues have brought forward concrete evidence of the value of this treatment is all that is claimed. Like Dr. Hurst and many others, I have used large doses of alkali at least 15 years ago. Questions of priority do not really interest me.

In our original paper it was stated that alkalosis is a bogy which need not be feared. I drew attention to the fact that very large doses of alkali might not be advisable in patients suffering from advanced renal lesions. Dr. Hurst states that alkalies are dangerous "with renal insufficiency which may be so insignificant that it can only be recognised by estimating the blood-urea." Unfortunately for this assertion, it is now quite well understood that changes in blood-urea are obtained only in advanced cases of nephritis; estimation of blood-urea is of no value in mild cases and gives no information in such cases. With regard to the alleged danger of giving alkali to patients suffering from advanced pyloric stenosis, I may say that I have repeatedly given alkali to such patients with no untoward results of any kind. Space forbids a full discussion of this subject at present, but I have treated the matter at length in a lecture on the Medical Treatment of Gastro-duodenal Ulceration delivered to the local branch of the British Medical Association at Canterbury. This lecture will be published very shortly. It is true that my personal observation has been practically confined to hospital cases, but I have talked to many of our staff, as well as to former students and to several general practitioners who are using the method. Not one of these has ever had the slightest difficulty. In my ward at the present time there is a patient who was treated by intensive alkaline treatment in another clinic. This patient had a letter, in which it was stated that alkaline treatment had been tried, but had to be discontinued because of the appearance of symptoms of alkalosis. We gave the usual alkaline treatment, but no signs of alkalosis appeared. This patient is now rapidly progressing towards recovery. It would be nothing less than a tragedy if the practitioner were to be prevented from using this treatment for fear of so-called alkalosis, a condition which under the circumstances of the treatment and with healthy patients is more theoretical than real.

Dr. Hurst's statements regarding the neutralising value of the various doses of alkali used are, of course, correct. Sodium citrate has been used instead of sodium bicarbonate by several physicians for many years. Bismuth oxycarbonate neutralises only very slowly and to a limited extent under the conditions of acid concentration likely to be met with in the stomach. It is, however, useful for controlling diarrhœa when this is present. Very often I use a powder which contains only 1 part of bismuth oxycarbonate in 13 parts of the powder. At present we need not trouble about complicated physico-chemical and biochemical considerations governing the correct dosage of alkali. The correct dose for practical purposes is that which controls the acidity and allows of a fairly regular action of the bowels. Beyond this, in the present state of our knowledge, it is not necessary to go. As far as teeth are concerned, might I point out that in the original paper the following sentence occurred: "Of course, it goes without saying that defective teeth should be attended to."

The intensive alkaline treatment gives such excellent results that it should be used by every general practitioner in the country. No special supervision or knowledge is necessary; many patients do quite well while at work. Its application is now so simple that it hardly inconveniences the patient.

I am, Sir, yours faithfully,

London, March 5th, 1928. HUGH MACLEAN.

To the Editor of THE LANCET.

SIR,—With reference to Dr. Hurst's letter that our observations are restricted to patients of the hospital class, may I say that I have examined many private patients, and that the results have been the same as those seen in the hospital. No symptoms attributable to the alkali were encountered. I have examined many patients under varying forms of treatment, and I have found universally that only those treated by the intensive method achieved the desired results in a short time, many of the others showing but varying degrees of improvement.

With regard to oral sepsis, it was assumed in our paper that the present-day practitioner was sufficiently conversant with modern practice not to overlook such an obvious possibility of trouble. My experience has been that nearly all cases had been examined and treated for oral sepsis or had been advised to consult their dental surgeons. In some cases this had not been undertaken by the practitioner, as he had at once handed the patient on to the special department concerned, to be taken over in toto, and not because he had not taken the possibility into consideration.—I am, Sir, yours faithfully,

London, March 5th, 1928. GEOFFREY FILDES.

DR. MUTHU'S "PULMONARY TUBERCULOSIS."

To the Editor of THE LANCET.

SIR,—Being so far away I was not able to see before now your issue of Jan. 7th, which contains a review of my book on Pulmonary Tuberculosis. I consider your reviewer has done scant justice to my work, which he has handled rather roughly while missing its main theme and purport. For one thing he has not made much discrimination between theories and suggestions in the work, which are valuable only so far as they are pregnant with new ideas, and facts which I have adduced to prove some of my contentions. He talks irrelevantly about the "offspring pneumococcus" and "brother of the gonococcus." But brother or sister, he can neither refute nor

ignore the important experiments made by such men as Maher, Stockwell, Sweany, who have conclusively shown the intenability of constancy of type of tubercle bacilli and the existence of a certain relationship between them and Gram-positive granules, cocci, bacilli and even granular forms brought about by means of suitable cultural media.

I should have thought that the work of a reviewer is, instead of sitting in judgment as if he were an infallible pope, to place the salient points of a book before the readers and leave them to judge whether it is a "good" or a "bad" one. The burden of my volume is to emphasise :—

1. That the ætiology of tuberculosis lies deeper than infection with tubercle bacilli.

2. That social and economic conditions create or favour the disposition to disease.

3. That nutrition and environment, instead of being side issues, control tuberculosis more than infection, which only rears its head when health is impaired by poor nutrition and bad social and economic environment.

4. That in proportion as the nations stand high in their economic prosperity and well-being of their people have they reduced the incidence and mortality of tuberculosis.

The whole tenor of the review shows bias and want of sympathetic insight in my work, and it would be bad day if the fate of a new publication should depend upon the prejudiced opinion of one man who may or may not be qualified for his task, and who may shelter himself under an assumed name or remain anonymous.

Yours truly,

Egmore, Madras, Feb. 9th, 1928. C. MUTHU.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

REORGANISATION OF OFFICES (SCOTLAND) BILL.

ON Feb. 28th Sir JOHN GILMOUR (Secretary of State for Scotland) moved the second reading in the House of Commons of this Bill, which, he explained, provided that on the appointed day the Scottish Board of Health, the Board of Agriculture for Scotland, and the Prison Commissioners for Scotland should cease to exist. The powers and duties of these Boards, including the Prison Commissioners for Scotland, were to be transferred to and vested in a Department of Health for Scotland, a Department of Agriculture for Scotland, and a Prisons Department for Scotland, under the control and direction of one of His Majesty's Principal Secretaries of State, and consisting of a secretary and such other officers and servants as the Secretary of State may determine. The offices of the departments were to be situated in Edinburgh. The persons employed by the Board were to be transferred and attached to the department, and should be in no worse position as regards tenure of office, salary, and superannuation allowance than if the Bill had not passed. No vacancy in the office of member of the Scottish Board of Health existing at the passage of the Bill or afterwards was to be filled, and that part of Section 3 of the Scottish Board of Health Act, 1919, requiring that the Board of Health should at all times include certain members having the qualifications therein set forth was to cease to have effect. The right hon. gentleman said that the Bill was practically identical with that of last year. While it abolished patronage, the Bill did not lessen the possibilities of contact between outside interests in Scotland and the departments. The sole motive was one of efficiency. The Bill left intact the same responsibilities, and it gave to the Minister in charge in the House of Commons additional assistance in that, in future, he would have the valuable advice of first-class civil servants. There was no intention of transferring the work of the departments to London, and to make that clear he had inserted a provision in the Bill to the effect that the offices should be in Edinburgh.

Rejection Moved.

Mr. T. JOHNSTON moved the rejection of the Bill, and contended that although the offices would be in Edinburgh, the power that directed the departments would be in London. The Government were deliberately attempting to take away the administration of public affairs in Scotland from skilled men selected because of their specialised knowledge, and transfer them to men who, whatever scholastic qualifications they might have acquired at Oxford or Cambridge, had not proved their fitness to control the departments.

Mr. BARR seconded the rejection and Mr. WHEATLEY supported it.

Mr. SIDNEY WEBB urged the Government not to smother the real experts in these departments by administrative chiefs. He admitted that it would be to the advantage of the Minister to have an administrative chief in each department.

Mr. KIDD said that from his experience in the Board of Health there was probably no better service than that which was obtained in Edinburgh. There was, however, a great deal to be said for concentrated administration of the public service in the hands of the civil service.

The debate on the second reading was adjourned.

Administrative Efficiency.

The debate was resumed on Monday, March 5th.

Mr. SKELTON said that nobody had ever suggested that the administration of health and other things for which the Board of Health was responsible was less efficient in Scotland than in England. Neither in the Parliament of 1922 nor in this Parliament had there been a single question raised as to the administrative efficiency of the Board. If this Bill passed he did not believe that they would have first-class civil servants at the head of the departments in Scotland. He opposed the Bill because he was satisfied that the Government were taking a step which was unwise and unjustified and one which would not be of any essential use at all.

Dr. DRUMMOND SHIELS said that he opposed the Bill. It was an attempt in the name of efficiency, and with a timid suggestion of economy, to approximate the Scottish system of government to the English system. The Board system was a more democratic form of administration than the one-man system. A great part of the functions of Scottish boards was to deal with local authorities. Members of those boards were not simply secretaries and bureaucrats; they were people who, in many cases, had had outside technical and other training. Some of them had been actually members of local authorities, and had had to deal with local authorities. Such negotiations with local governing bodies constituted a very important element in Scottish administration and was a function much more suitable for a board than for a civil servant as head of a department. A Board was more impressive than a Secretary and had more human points of contact. It was true that the Board system, which included men who came in from the outside, involved patronage, but the nominations were made by the Secretary of State for Scotland, and it was not likely that that right hon. gentleman would nominate for these positions individuals who would be likely to damage the efficiency of his own departments, and do that for political reasons. It must be admitted, on the whole, that the men who had been appointed to these posts in the past had been able men. His fear was that under the Bill the higher posts would be filled from England. He was specially interested in the Scottish Board of Health. The Secretary of State for Scotland, speaking during the previous debate on this Bill, put a great deal of emphasis on the report of the Royal Commission which, he said, condemned the Board system in Scotland. But the Royal Commission was dealing with an entirely different kind of Board and was referring almost entirely to the Local Government Board. The Board of Health met at least once a week, and sometimes oftener, and had minutes kept of its proceedings. It was under the chairmanship of the Parliamentary Under Secretary for Scotland and was a very different Board from the old Local Government Board. On the present Board was the head of the National Health Insurance administration in Scotland, a representative of the legal department, and of the Pensions and Medical Departments. The appointment to the head of the Medical Department was likely to be vacant in a very few weeks. Who was going to be appointed to succeed the very distinguished present head of the department? There were men junior to him in that department who were suitable for that appointment and who were familiar with Scottish local government. Was one of those to be appointed or were they to have appointed to this important position in Scotland, requiring a very intimate knowledge of Scottish local authorities, an official from the English Ministry of Health? They must wait and see, but he was very suspicious that some change of that kind was likely to take place. The heads of the Scottish Medical Department and the junior medical officers had been in the past men who had been medical officers of health in important towns in Scotland. The House, he thought, would agree

at a man who had had experience of the work of a medical ficer of health in some of the large towns of Scotland was ie proper type of man to be at the head of their national edical department. The Bill took away some of the last aces of Scottish individuality and sentiment from the dministration of their country. It was really a triumph r bureaucracy at the expense of national sentiment.

Departmental Unity.

Mr. JAMES STEWART said that, while he opposed the Bill, thought that the proposals of the Secretary of State for aving all the departments under one head would produce od results. If they took the health administration they ould find that in Edinburgh it was divided into three uildings in three different parts of the city. If the Govern- ent would introduce any proposals for providing the uildings which were clamantly necessary so that they uld have the Scottish departments under one roof there ould be whole-hearted support from the Labour Party r the Bill. It seemed to be suggested that there was fficulty in getting advice from the heads of the departments. is experience in office was a very brief one, but it taught m that it was easy to get into touch with the head of any partment. Suppose that it was a medical problem relating the health administration in any part of the country, and wanted advice. He applied to the head of the department r his experience and advice. His advice was freely tendered d as freely accepted. Such advice was very generally ted upon because one knew that there was ability and perience behind it. There was complete independence the part of the head of the department and on the part the person who had to supply the Minister with advice. rthermore they had the benefit every Friday morning of meeting of the Board of Health at which the heads of the rious departments were present. Either the Secretary or nder Secretary for Scotland took the chair and deliberated the problems for discussion. They had the benefit of all e experience of the members of the Board, and, finally, e Minister had to assume responsibility. He it was who me to a conclusion even if, as happened sometimes, the ole of the Board was against him. If his experience and at of the Secretary for Scotland had been similar, then the anges proposed in the Bill could not be beneficial. It was neficial also for local authorities to meet the Board of alth to discuss the health administration of the local bodies. r that very strong reason they ought not to depart from e Board of Health system and create new departments. ere had been for some time a movement for securing ity among local authorities. Economy and efficiency could developed in a way that was not possible under the sent system. In Lanark, for instance, there were two or ee authorities carrying on medical administration, each lous of its own province, each running its own hospitals, l all carrying on in a way that was not beneficial. Here Board of Health came in. With its officials it could meet members of those conflicting authorities and discuss tters with them. Various men were at the Ministers' ow to jog him and to advise him in his attempt to ng these people to a right understanding. By this Bill y were going to give that up and to put nothing in its ce.

Mr. D. GRAHAM said that they had no complaints against various Boards. He had met the Board of Health and l nothing but pleasant recollections of the meeting. He arded every member of the Board as well qualified. ey were always courteous and willing to hear anyone, l they always produced arguments for any decision they ve.

Reply to the Debate.

Mr. WATSON (Lord Advocate), replying to the debate, l that at present there was no first-class civil service ition open to a Scotsman in Scotland, but the Bill would ke that possible. In reply to Dr. Shiels, he said there uld be no doubt whatever that the men who were appointed uld have the same capacity for administration as the sting individual members of the Board in their particular artment. What was wanted was administrative know- ge, the power of taking a concentrated opinion as an ninistrator, of all the expert knowledge available. That s the vital thing, and that was one of the reasons why he l, quite frankly, that the Boards were not as efficient as epartment would be. At the beginning, and he hoped in cession, the existing members of the Board of Health uld remain in office. In form their appointment would be erent, but they would be retained and their expert wledge would be continuously available. There would be change in that aspect of the matter, and the Advisory ncils would carry on just as at present.

The motion for the rejection of the Bill was rejected by votes to 66, and the Bill was read a second time and mitted to a Standing Committee.

NATIONAL HEALTH INSURANCE BILL.

Mr. CHAMBERLAIN (Minister of Health), on Monday, March 5th, introduced into the House of Commons the National Health Insurance Bill, a measure to amend the National Health Insurance Act, 1924, and other enactments relating to health insurance. The Bill was read a first time.

The new measure incorporates many of the recommendations of the Royal Commission which carried out an exhaustive inquiry into the question of health insurance, and among its provisions the question of a more effective dental service for panel patients is dealt with.

HOUSE OF LORDS.

WEDNESDAY, FEB. 29TH.

SHORTAGE OF FACTORY INSPECTORS.

Viscount ASTOR asked whether it was proposed to increase the number of factory inspectors so that the inspections might be adequately carried out and unnecessary loss of life and health prevented. He said that there was a large number of places, rather over a quarter of a million, which were technically factories and workshops and liable to inspection. Of these about 129,600 were factories, as distinct from workshops. In order to carry on the inspection of these factories the whole staff consisted only of 205. From that number they had to deduct those organisers and technical advisers who did not carry out routine duties of inspection, so that there was only something like 170 to 180 men and women to carry out the inspection of over a quarter of a million premises. The duties of the inspector under the various Factories and Workshops Acts were multitudinous. There ought to be at least one inspection a year. There were certain premises where dangerous processes were carried on and where the atmosphere was apt to be vitiated, and these ought to be inspected about once every three months. It was obvious that a staff of 170 or 180, however zealous and hard-working, could not possibly get round so large a number of premises as a quarter of a million. In 1925 there were 27,663 factories, as distinct from workshops, which were never inspected at all. There were 1290 factories which were not inspected either in 1925 or 1926. That this state of affairs was unsatisfactory was proved by the fact that in 1926 there were 140.000 accidents, 800 of which were fatal. It was true that the number of fatal accidents in 1926 was slightly less than in the previous year, but that was very largely because in those industries where a large number of accidents occurred many firms were either working part-time or were closed down altogether. Actually, in the industries which were not stopped as the result of strikes, or from other causes, there was an increase of fatal accidents. He was informed on good authority that the staff of factory inspectors was about 25 per cent. below the figures fixed in 1921 as being desirable and necessary. The responsible Minister, speaking in the House of Commons, had admitted a shortage of inspectors, and year by year, when questioned about it, had said that the Government were waiting until the passing of the Factories Bill. He could not see why the Government were waiting for that Bill, more particularly as he regretted to see that year by year that very much-needed and oft-promised measure was repeatedly postponed. It was not sufficient to say that one or two more inspectors either had been or might be appointed. If it was true that there was anything like a shortage of 25 per cent., he hoped that they would be told that the Government contemplated appointing a sufficient number of inspectors so that those duties and responsibilities which were necessary, and which were intended by Parliament, might be properly carried out and that there might be adequate safeguards for health, limb, and life.

Home Office Reply.

Lord DESBOROUGH, speaking for the Home Office, said that the present position of factory inspection might be stated thus: In 1913 the staff numbered 222, which included 9 inspectors at headquarters; the establishment was now 206, including 20 at headquarters. In comparing these figures allowance had to be made for the transference of the factory inspection service in Ireland to the Free State Government and the Government of Northern Ireland, which involved a reduction of seven posts. This showed an actual reduction of strength of nine posts, which were given up in the interests of economy. The number of visits paid to factories and workshops had dropped, he was sorry to say, from 406,445 in 1913 to 300,368 in 1926. That decrease, however, related entirely to inspection of workshops—that was to say workshops where no power was employed. The number of visits to factories (which were the more important premises under the Acts) had not only been maintained, but had improved, the number of visits to factories in 1926 being 188,172, as compared with 176,591

in 1913. The present Government, and the previous Government, had been aware all along that the standard of inspection was too low, and that the inspectorate staff would have to be increased to secure the high standard and the enforcement of the law in factories and workshops which they would like to see attained. Moreover, if and when the Factories Bill, which was introduced in the House of Commons last year, became law, fresh burdens would be thrown on an already overworked staff. The policy of the Government, which, like their predecessors, had been to wait until that Bill had been passed and the whole question of the organisation and strength of the staff could be examined in the light of the new situation and duties created by the Bill, had been explained by the Home Secretary in the debate in the House of Commons in July, 1927. So far as the fire at the premises of the Waste Film Products, Ltd., was concerned, two questions arose: First, whether the Celluloid Regulations of 1921 made under the Factories and Workshops Act, 1901, which applied to all celluloid factories were sufficient to ensure the highest standard of safety in works where the waste products of film were dealt with. It had already been recognised that these general regulations were inadequate for that purpose. Secondly, whether this accident had revealed a need for the immediate appointment of nine inspectors in the metropolitan area where works of this nature seemed to have congregated. The Home Secretary was satisfied that the existing regulations were not sufficiently stringent. The film stripping industry was one of quite recent development, and was, in the opinion of the chief inspector of factories, appreciably more dangerous even than the film manufacturing industry. The Home Secretary therefore decided that two new codes of regulations should be issued, one dealing with the manufacture of the film and the other with works in which waste film was manipulated. Both these codes had now been made and came into force on March 1st. They introduced a number of new and important safeguards. At the same time the Home Secretary came to the conclusion that having regard in particular to the development of this industry in the metropolitan area, it was necessary to make some addition at once to the staff in the London divisions. He therefore obtained the sanction of the Treasury to appoint two additional men inspectors (included in the establishment of 206 already mentioned), and these appointments would be made as soon as possible. In the meantime, all waste film works had been specially visited by one of His Majesty's engineering inspectors of factories, and the steps necessary for compliance with the new regulations had already been taken in hand. He supposed that the new Factories Bill would be coming on next session, but in order to expedite matters the Home Secretary had already decided to advance the date of appointment of a committee to go into this question of additional inspectors so that no time should be wasted, although it would be very difficult, until they knew how the new Factories Bill was going to emerge, to draw up any regulations or to appoint many more inspectors. Nor could they claim that an increase of factory inspectors would obviate these accidents. Accidents occurred, unfortunately, in a great many places which were most carefully inspected, and he did not think that the inquiry which had been referred to satisfied the authorities that the deplorable accident was necessarily due to a lack of inspection, or would have been avoided had there been more inspectors.

Factory Inspectors and the Prevention of Accidents.

Lord ARNOLD said that the reply of Lord Desborough had done very little indeed to deal with this matter, and did not hold out any real hope of improvement. In his view, the number of factory inspectors ought to be doubled. The trouble in this matter was another instance of the indifference of the Government to labour interests. It was not economy to be cheeseparing in the matter of factory inspectors: it was parsimony of the worst description. If the Government had the will to deal with this matter they could do so perfectly well, without waiting for the Factories Bill.

Lord BANBURY OF SOUTHAM said that personally he regretted that Lord Desborough had not said that he was going to reduce the number of inspectors instead of increasing them. What they wanted was to give people an opportunity to work as long as they possibly could and not to hamper them by introducing all sorts of inspectors who cost money and did no good to anybody.

Earl RUSSELL said the insufficiency of factory inspection had been a growing scandal for many years. The solatium they were offered of two additional inspectors was really too ridiculous.

Lord JOICEY said he thought that there was a great deal of exaggeration with regard to the value of inspectors generally. He would welcome most heartily the appointment of more inspectors if he believed that they would reduce accidents, but he was very doubtful about it. If they consulted large employers they would find the opinion that strong pressure ought to be exercised on trade-unions to induce their members to make known to the employers or the foremen, all cases where negligence was shown in carrying out regulations. That would have far more effect in stopping accidents than the employment of more inspectors.

Lord PARMOOR said that he did not doubt that the employers had good intentions in this matter, but he repudiated the suggestion that the workmen were to blame rather than the employers. He put no blame on either party. In the history of factory work it had been found that adequate inspection was necessary in order that the lives and health of the workers might be properly protected. There was no dispute on that question, and it was beside the point to suggest special intentions or special wickedness on either side. They were admittedly in the position of having a shortage or insufficiency of inspectors at the present time, and that ought to be put right at the earliest moment, not in the interests of a class, but in the interest of industrial life as a whole.

DANGER OF LEAD TETRA-ETHYL IN MOTOR SPIRIT.

Lord BUCKMASTER moved:

"That it is expedient that His Majesty's Government should immediately set up a Committee to advise as to the public danger that may arise from the use of lead tetra-ethyl in motor spirit."

He said that last summer he was speaking to an eminent medical man, and he asked him if he knew anything about ethyl spirit. He (Lord Buckmaster) replied that he knew nothing at all. The medical man said that he would very soon know something about it if the spirit was introduced here. It was one of the most dangerous things, he said, that men could possibly handle. He (Lord Buckmaster) said in those circumstances the Home Office or the Ministry of Health would either prevent or make strict regulations for its use. He was sorry to find that his optimism in that respect had had no foundation in fact. The spirit had been introduced here, at the instance of one of the most powerful trade organisations in the world, and was being pressed for sale, and, so far as he knew, neither protection nor regulation from either the Home Office or the Ministry of Health had been provided with regard to its use. The spirit was discovered in 1859, but nothing was done with it until about 1879, when Prof. Franklin investigated it more closely. It was then classed as the most dangerous poison known. During the war it was considered as a proper poison gas, as it was a means by which they could disseminate more certain death than with any other poison. It was rejected, however, not because of any deficiency in its lethal power, but because its method of dissemination either through shell or liberation from tanks, rendered it unsuitable. The detonation destroyed some of its chemical molecules and so destroyed some of its effects. This spirit had two great values. The first was that owing to the fact that it permitted of greater compression than ordinary petrol vapours it enabled cars to take gradients more easily than the ordinary spirit, and it also avoided the knocking which was due to some detonation not quite fully explained which in car-running was regarded as most unpleasant. What was to be said on the other side? The spirit contained as its very essence lead tetra-ethyl, which distinguished it from the ordinary motor spirit. If that ingredient were either put upon the hand or breathed in a person ran a very grave risk indeed of lead poisoning, and as it was capable of being dissolved in oil and was highly volatile, there was no need for any abraised surface on the skin for the poison to take effect. Indeed, an eminent scientific man had said to him recently: "I would not have one drop of this on my finger. If I had, I would spend the whole of the rest of the day trying to secure cleanliness." Like so many of these things, the action of the spirit was not necessarily instantaneous. Its real mischief was a form of lead poisoning more deadly than the lead poisoning effected through the use of paint or of lead glazing. It was an illness which came on without warning. If pain was a sentinel to warn one of the approach of illness, then the sentry often slept at his post, for diseases like cancer, tuberculosis, and lead poisoning passed him unchallenged and entered into the very citadel of life. That was the character of this particular poisoning and unless some steps were taken the consequent danger which might result was very grave indeed to contemplate. The spirit had its origin in the United States, and hearing of the mischief it had caused, the Government of the United States appointed a commission some two years ago to inquire into the matter. The commission reported that no positive evidence could be obtained of harmful effects, but they urged strongly that suitable appropriation be requested from Congress for the continuance of the investigations. So far as he could see, even in America this substance was only allowed to be used subject to rules and regulations issued by an authority which was equivalent to the Ministry

[ealth here. Those rules and regulations were really ather laughable. For instance, it was prohibited carelessly o spill the spirit on the floor of a garage. Had their lordhips ever found a garage where there was not some petrol arelessly spilt on the floor? Again, they had to wash heir hands before food or tobacco or anything else was onveyed to the mouth. Those were some of the suggestions ade in America to protect people against the attack of n insidious and deadly disease, but they all knew that ch rules were perfectly useless here, and he did not suppose at they were going to entrust the safety of the British eople to recommendations made by the authorities in nother country. This country was bound, if warned, to ok after this matter. Had they been warned? Sir William ope, professor of chemistry at Cambridge, wrote a letter the *Times* of Feb. 22nd, in which, after quoting from this port, he said :—

"Pharmacological evidence has been published which proves nclusively that lead tetra-ethyl is absorbed from its dilute trol solutions by animals through the skin and by the lungs. garage hand who continually wets his skin with such a liquid, lashes it on his clothes, eats his food without scrupulous tention to cleanliness, or breathes an atmosphere tainted with e vapour, must thus be liable to contract lead poisoning; reless engine cleaners or repairers will incur a similar liability."

Prof. Baker, who was the President of the Chemical Society, Fellow of the Royal Society, professor of chemistry and vernor of the Imperial College of Science and Technology, rote another letter to the *Times*, to the following effect :—

"Sir William Pope has, I think, understated the case against e use of lead tetra-ethyl in motor spirit. This substance does ot act on the body as an ordinary lead poison, but it has a ecific action which is much more harmful. It is little less isonous than the corresponding mercury compound which used the death of two promising young chemists at Oxford any years ago. Lead tetra-ethyl passes rapidly through the in, is absorbed by the blood, and causes very severe nervous ouble. If sufficient is absorbed death occurs in a few weeks."

Prof. Baker also pointed out that whenever this spirit as put upon the skin it found its way into the body, even though the skin was unabraised. He concluded his letter ith a statement which required further comment. He id :—

"I wrote, as President of the Chemical Society, to the Ministry Health more than a month ago, calling their attention to the gency of the matter. So far as I know, nothing has been ne."

ot only had nothing, as far as he knew, been done, but is distinguished gentleman who was seeking to put his nowledge at the service of the Government received thing for his pains except a curt acknowledgment his letter. That was not the way in which a most ninent and distinguished scientific man should be treated a Government department. If the statements he had oted were doubted, then there ought to be a committee inquiry. Unless the Government acted nothing would done. These vast trade organisations did not care how any people suffered from the exploitation of their goods, r commerce had no conscience and trade no tenderness of art.

Lord GREENWAY supported the motion. He did so, he id, in the interests of the oil industry as a whole. It ight not be generally known that all the big petrol producing mpanies were engaged on the problem of how to produce e quality of natural or compounded spirit best qualified meet the demands of the large portion of the public o now favoured high compression engines in motor-cars, it none of them was desirous of producing a spirit which s liable to criticism on the score of danger. The position regarded tetra-ethyl spirit was that this new compound d been placed on the market, and while the company ich introduced it claimed that it was non-injurious to alth, various statements had appeared in the press ggesting that it was toxic in character and dangerous the health, or even the life, of the people who used or ndled it. The number of people who used or handled trol was now so enormous that it was essential in the blic interest that a properly constituted board, including me of our leading chemists and toxicologists, should be pointed definitely to settle once and for all the point in spute.

Reply for the Government.

The MARQUESS OF SALISBURY, Lord Privy Seal, replying the Government, said that he admitted that too long period had been allowed to elapse before the Ministry of ealth replied to Prof. Baker's letter of warning on this bject. If that eminent chemist felt in the least that he d not been properly treated, he hoped that he would cept from him (Lord Salisbury) the fullest apologies. regarded the substance of Lord Buckmaster's speech, he l not think that a very great deal of difference would be nd between the Government and the noble and learned d. So far as the Government were concerned, there s no indifference towards this matter, the importance of which they fully recognised. They recognised the risk attaching to this commodity and proposed to deal with it. Tetra-ethyl itself was highly dangerous and had, of course, very serious consequences if it was not properly treated. But that did not mean that it must not be manufactured. Many highly dangerous things were manufactured, such as vitriol and arsenic. But the greatest care ought to be taken. As a matter of fact, tetra-ethyl was not manufactured here, but in America. A moment of special risk occurred when, having been imported into this country, it was blended with petrol spirit. This blending process involved considerable risk and that was a matter which was receiving the attention of the Home Office at this moment. Up to now, however, no case of lead poisoning had arisen from this commodity in England. Turning to the petrol, which had a very small admixture of this commodity, Lord Salisbury said that he was correct in saying that it was a mixture of 1 in 1300 parts, or something of that kind. He did not say that that eliminated all its toxic character, but he wanted the House to have a true picture of the exact condition of affairs. The blend was undoubtedly a very useful commodity and a very useful source of power. The Government had to consider how far they ought to interfere with a recognised improvement in the source of power, especially for aeroplanes. The Public Health Department in the United States appointed an investigating body consisting of seven distinguished scientific men to inquire into the danger of ethyl petrol—the spirit which was slightly diluted with this commodity. That committee reported that no positive evidence could be obtained of harmful effects attributable to the use of ethyl gasolene. The first conclusion of the committee was :—

"Drivers of cars using ethyl gasolene as a fuel and in which the concentration of tetra-ethyl lead was not greater than 1 part to 1300 parts by volume of gasolene, showed no definite signs of having absorbed lead after exposures approximating two years."

The second conclusion was :—

"Employees of garages engaged in the handling and repairing of automobiles and employees of automobile service stations may show evidence of lead absorption. In garages and stations in which ethyl gasolene was used, the amount of apparent absorption was somewhat greater than in those without ethyl gasolene";

he would like Lord Buckmaster to note this limitation—

"but the effect was slight in comparison with that shown by workers in other industries when there was definite danger from lead . . . and for the periods of exposures studied was not sufficient to produce lead poisoning."

And this was the third conclusion :—

"In the regions in which ethyl gasolene has been used to the greatest extent as a motor fuel for a period of between two and three years, no definite cases have been discovered of recognisable lead poisoning or other disease resulting from the use of ethyl gasolene."

He did not desire their lordships to accept the conclusions of that Report as conclusive. After all, it was not a British Committee and he had no means of testing the competence of the scientific men who were said to have conducted the inquiry. But undoubtedly it was a body of scientific men appointed by the relevant Department in the United States. He would therefore suggest that they must approach the condemnation of this commodity with a certain amount of caution and not fall into the error of assuming the worst until it was proved. Undoubtedly the British Government could not be indifferent to the risk to which the noble and learned lord now called attention, and they were about to undertake research of a careful character. For that purpose the Government were going to appoint an Inter-Departmental Committee, the composition of which had not been definitely settled, but he thought that it would consist of representatives of the Ministry of Health, the Home Office, and the Medical Research Council. This committee would be appointed forthwith.

Scientific Investigation.

Earl RUSSELL said that he was very glad that this Committee was going to be set up. They knew, of course, *prima facie* that lead poisoning was a most insidious and deadly disease, and if this material actually caused poisoning of that nature there would be the gravest necessity to take action.

Lord BUCKMASTER said that Lord Russell seemed satisfied. He wished he could be. An Inter-Departmental Committee was not what he wanted. What he desired was a scientific investigation, not an investigation by a Departmental Committee. Departments did not have eminent scientific men on their staffs.

The Marquess of SALISBURY: The Medical Research Council has.

Lord BUCKMASTER said that the Medical Research Council had a certain number of doctors, but what they wanted were scientific men, such as eminent chemists, who knew about

this matter and would satisfy Lord Salisbury who spoke lightly of one in 1300 that watered vapour from nickel would poison with one in 20,000. Prof. Baker had written to him a letter in which he said that after this spirit had burned in the cylinders of the engine the lead came into the exhaust as a fine quality of lead oxide and that in a crowded street, like Piccadilly for example, the unfortunate passer-by would be exposed to the same danger of lead poisoning as painters were before they were protected by Government action. It was not a matter of small moment because people were only found to be slightly affected. They would go on getting more and more affected till illness and death overtook them and they would have done nothing except to wait nine months and then set up an Inter-Departmental Committee. But he knew that it was no use asking for more. If the House was divided and they beat the Government it would have no effect. Therefore, having done his duty by calling attention to the matter, he did not propose to proceed with his motion.

The Marquess of SALISBURY said that if Lord Buckmaster thought that there should be scientific men added to those who sat on the Inter-Departmental Committee he would represent that view in the proper quarter.

The motion was, by leave, withdrawn.

TUESDAY, MARCH 6TH.

DESTRUCTION OF VERMIN BILL.

Lord STRATHSPEY introduced the Public Health (Destruction of Vermin) Bill which was read a first time.

HOUSE OF COMMONS.

TUESDAY, FEB. 28TH.

Post-office Messengers and Flat-foot.

Mr. AMMON asked the Postmaster-General whether all applicants for service in the Post-office as messengers suffering from flat-foot were medically rejected; and whether the number so rejected could be given.—Sir W. MITCHELL-THOMSON replied: It is the practice to reject all applicants for service in the Post-office as boy messenger who are found to be suffering from flat-foot. The number so rejected during the year 1927 was 17.

Night Work by Youths in Mines.

Mr. LEE asked the Secretary for Mines whether he was aware that many of the 28,000 youths of the ages between 14 and 16 working underground at the collieries in the country were expected to work on the night shift; that youths of a similar age were not allowed by law to work on the surface at night; whether any of these youths were medically examined as to their physical fitness for working underground; and whether he was prepared to recommend that facilities be granted for placing youths working underground on the same basis as youths on the surface.—Commodore H. DOUGLAS KING replied: I am aware of the facts referred to in the first two parts of the question. As regards the third part, medical examination is the practice at some collieries, but it is not compulsory by law. In reply to the last part of the question I would remind the hon. Member that in 1911, when Parliament passed the Coal Mines Act of that year, it was decided that the prohibition against night work by boys on the surface should not be extended to underground work, and that this decision was confirmed by the Washington Convention of 1919 and by the Employment of Women, Young Persons and Children Act of 1920. I am not at present aware of any sufficient reason for reversing this decision.

WEDNESDAY, FEB. 29TH.

Tetra-ethyl Poisoning.

Lieut.-Commander KENWORTHY asked the Minister of Health whether he will state the steps, if any, he proposes to take to prevent injury to workmen, persons employed in garages, and the general public from ill-effects from the use of petrol diluted with lead tetra-ethyl; if he was aware that lead tetra-ethyl was a poisonous substance easily absorbed by the blood through the skin and that its use in garages had been proved to be dangerous; and whether, until his department has examined into this matter, he will consider issuing special warnings to garages and to the local authorities.—Sir KINGSLEY WOOD (Parliamentary Secretary to the Ministry of Health) replied: Lead tetra-ethyl is a poisonous substance, and those who make or sell preparations of petrol which contain it should take or advise precautions designed to avoid danger from handling or using these products. There is at present no definite evidence of injurious results following the use of ethyl spirit. The desirability of further inquiries or research into the nature of any danger to the public from its use is being considered in conjunction with the Medical Research Council, but pending such inquiry it is not proposed to take action on the lines suggested by the hon. and gallan Member.

Lieut.-Commander KENWORTHY asked if the righ hon. gentleman had seen a letter in the *Times* recentl from the holder of one of the Chairs of Chemistry at Can bridge in which he said that even the flooding of a carburette and getting this petrol on the skin might bring about ver serious poisoning, and in view of this would the right ho gentleman issue a warning interim to the report of th investigations;

Dr. VERNON DAVIES: Is the right hon. gentleman awar that Switzerland prohibited this ethyl petrol by ordinanc in 1925?

Sir KINGSLEY WOOD: No, Sir.

Persons Found Dead in London.

Mr. DAY asked the Home Secretary the number of perso who were found dead, and the number who remain unident fied, in the Metropolitan police area for the last 12 montl to the last convenient date.—Sir WILLIAM JOYNSON-HICK replied: In 1927, 707 dead bodies were found in the Metr politan Police District; 77 bodies of newly born infants, ar 74 other bodies remain unidentified.

Municipal Water-supplies.

Sir ROBERT THOMAS asked the Minister of Health whethe in view of the increasing competition among municip authorities for water-supply sources, he would consid making a Government allotment of water-bearing are in order to prevent small authorities from being squeez out by large wealthy cities.—Sir KINGSLEY WOOD replie The interests of small authorities are carefully watched ov by my Department when examining proposals for wat supplies and, where necessary, reports are made to Parli ment. A general survey and allotment of water-bearin areas would entail considerable expense and delay, and n right hon. friend prefers the system which has been adopt of appointing Regional Water Committees who estima local needs and then proceed to formulate definite propos for supplying them.

Milk Production.

Mr. GRIFFITHS asked the Minister of Agriculture t quantity of milk produced and available for consumption 1923, 1924, 1925, 1926, and 1927, and the quantity approximate percentage that was surplus to normal requi ments during those years.—Mr. GUINNESS replied: T following is the information asked for: The estimat production of milk (exclusive of milk fed to calves and pi per million gallons, in England and Wales in the und mentioned years, from June 1st to May 31st, was as follow 1923–24, 1100; 1924–25, 1117; 1925–26, 1135; 1926–2 1150. As a result of the special inquiries made in connexi with the last Census of Production it was estimated that t amount consumed as liquid milk in 1924–25 was abo 765 million gallons. With regard to the latter part of t question Mr. Guinness regretted that he had no informatio

Deaths from Small-pox.

Mr. GROVES asked the Minister of Health the number deaths from small-pox in England and Wales for ea quarter of the past year.—Mr. N. CHAMBERLAIN replie The following provisional figures for England and Wales 1927 give the deaths in respect of which "small-po appeared on the medical certificates as the cause, or one the causes, of death:—

Quarter ended March 31st	.. .. ..	19
,, June 30th	.. .. ..	17
,, Sept. 30th	.. .. ..	7
,, Dec. 31st	.. .. ..	6
		49

THURSDAY, MARCH 1ST.

Pensions Hospitals in Scotland.

Dr. SHIELS asked the Minister of Pensions: (1) If it w his intention to close Bellahouston and Craigleith Hospita and, if so, were the patients to be sent to Edenhall. Whether he proposed to return all Scottish disabled m in English hospitals to Scotland for treatment near th own relatives and friends. (3) How many hospital be the Ministry was to maintain in Scotland; and would th beds be in one hospital or in more than one.—Ma TRYON replied: Arrangements have been made, as I ha already informed the House, to close Craigleith Hospit the return of which has been asked for by the Parish Coun at an early date. The patients remaining in that institut who are occupying less than one-fifth of the availa accommodation, will be removed to Edenhall, which has be placed at the disposal of the Government by the Scott Red Cross and is being fully equipped as a modern surgi and medical hospital. The closure of Bellahouston Hospi is not at present in contemplation. I am anxious to exte the Ministry's tenure of this hospital and, as I have alre informed the hospital, I am in communication with

lasgow Corporation with that object and I am in hopes that satisfactory agreement will be reached. It is not possible estimate at the present time what will be the final requirements of the Ministry in Scotland in respect of special ospital accommodation of its own, but it is my intention ow, as heretofore, to provide such accommodation of the st quality that can be obtained for as long as it may be quired. The only cases having Scottish domicile who are ceiving in-patient treatment in England are cases suffering om certain special disabilities, such as diabetes and certain pes of neurasthenia, for which treatment is now provided the Ministry in a limited number of centres. It is not oposed to alter these arrangements, which are in the terest of the pensioners and have worked satisfactory some years past.

Panel Practitioners and Certification.

Mr. MALONE asked the Minister of Health what evidence had to show that laxness in certification by panel doctors counts for the increase of over 11 per cent. in the amount id in sickness and disablement benefits in 1927; whether had any information regarding the increase in sickness ims in various parts of the country, such as the coalfields d other depressed areas; and what were the further asures with regard to certification which he proposed adopt?—Mr. CHAMBERLAIN replied: The hon. Member pears to be under a misapprehension. I have never ggested that the whole of the increase in the sickness and ablement benefits in 1927 as compared with 1926 is ributable to laxity in certification. But for the evidence at some want of care in certification is a factor in the rease, I would refer to the speech of Sir Kingsley Wood the debate on Feb. 20th. It is not practicable to ascertain precise amount of the claims in any particular area, t such evidence as is obtainable indicates that the increase general and is not limited to particular districts. The ole question of certification is now being examined in nsultation with the Insurance Acts Committee of the itish Medical Association.

Danger of Tetra-ethyl Spirit.

Colonel HOWARD-BURY asked the Home Secretary ether his attention had been drawn to the use of a new tor spirit called ethyl; and whether he had held or would d an official examination into the nature of this motor rit in view of the dangers of lead posioning that might ur from its use.—Mr. CHAMBERLAIN (Minister of Health) lied: As announced by my noble friend, the Lord Privy al yesterday, I propose to set up a Committee of Inquiry, which the Home Office, Air Ministry, the Medical search Council, and the Ministry of Health will be represented, and which will also include the Government chemist some men of science unconnected with any department. e exact composition and terms of reference of the Comtee have not yet been decided.

MONDAY, MARCH 5TH.

Medical and Sanitary Service in Kenya.

Mr. BARR asked the Secretary of State for the Colonies ether his attention had been called to the fact that it had ently been laid down by the Deputy-Director of Sanitary vice in Kenya that the minimum for a large rural native trict, containing 100,000 to 200,000 people, was one trict medical officer, one medical officer of health, one pensary medical officer, two European nursing sisters, European sanitary inspector, and possibly a European pital assistant and a storekeeper, and, in addition, an quately trained native subordinate staff, a hospital with ommodation for about 100 patients, and from 6 to 12 -dispensaries; whether this standard was in force in of His Majesty's Colonies; and whether pressure was ught to bear on the Governments to increase their dical staffs up to this standard.—Mr. AMERY replied: attention has been drawn to the interesting address to Royal Society of Tropical Medicine and Hygiene in ch this statement occurred. So far as I am aware the ndard suggested has not been endorsed by any Colonial vernment, and as the medical requirements of the Colonies ler so greatly it would be impracticable to regard such a gestion as a general standard of administration. Oversea vernments are everywhere endeavouring to maintain a dical staff adequate to their requirements and I am glad say that in some of the African territories a relatively h standard has already been achieved.

Factory Inspection in Iraq.

Sir ROBERT THOMAS asked the Secretary of State for the onies whether there was any inspection of the factories raq where dates were packed for export to this country; , if not, whether, in view of the danger of disease being oduced by this means, he would inquire into the conons of cleanliness under which this industry was carried —Mr. AMERY replied: Stringent measures were taken the Iraq health authorities during the cholera epidemic of last year to ensure that all dates exported from Iraq were free from any possibility of infection. I am not aware whether under normal conditions the Iraq Government require inspection or consider it necessary. I am, however, asking the High Commissioner for a report on the subject. I am advised that there is no evidence of disease being introduced into this country through the medium of Iraq dates.

Medical Examination of Canadian Emigrants.

Mr. BENJAMIN SMITH asked the Secretary of State for Dominion Affairs whether, as Canadian medical officers had been detailed for duty in this country for the purpose of examining and certifying intending emigrants, emigrants so approved were secured against rejection after embarkation; and whether his department was furnished with statistics of the number of persons accepted or rejected by these officers.—Mr. AMERY replied: Intending settlers in Canada who are examined and passed by Canadian medical officers are not required to undergo further examination and are not liable to rejection on medical grounds on arrival at the port of entry unless essential information has been withheld, or unless some disease has developed in the interval. The new arrangements only came into operation on Feb. 14th and no information is as yet available as to the numbers of applicants accepted or rejected by these officers.

Isolation of Pauper Small-pox Contacts.

Mr. CHARLES EDWARDS asked the Minister of Health whether he had received a letter from the Bedwellty Council asking that the law should be amended so as to provide that in the case of persons who had been in contact with, or were suffering from, small-pox or other infectious disease in casual wards of poor-law institutions, the medical officer of health should be empowered to have them detained and isolated for such period as he might deem necessary; and would he take steps to ensure this being done.—Sir KINGSLEY WOOD replied: The reply to the first part of the question is in the affirmative. As regards the second part, there is power under the present law to secure the removal to hospital of any person who is suffering from a dangerous infectious disease and is without proper lodging or accommodation, but as at present advised, my right hon. friend does not think it necessary to introduce legislation conferring similar powers in regard to persons who have been in contact with cases of such diseases, though not themselves so suffering.

Naval Hospitals.

Dr. VERNON DAVIES asked the First Lord of the Admiralty if he could give a full list of naval hospitals at home and abroad; the number of beds in each hospital: and the number of personnel attached to each hospital.—Lieut.-Colonel HEADLAM (Parliamentary Secretary to the Admiralty) replied: The particulars asked for are as follows:—

Royal naval hospitals at—	Beds available.	Salaried staff.	Wages staff.	Total of staff.
Haslar	625	62	334	396
Plymouth	590	52	272	324
Chatham	490	55	279	334
Portland	104	12	37	49
South Queensferry ..	103	8	29	37
Great Yarmouth ..	213	4	38	42
Malta	365	31	131	162
Cape of Good Hope ..	48	5	21	26
Bermuda	77	6	16	22
Hong-Kong	107	11	70	81

TUESDAY, MARCH 6TH.

Closing of Military Hospitals.

Dr. VERNON DAVIES asked the Secretary of State for War how many beds had been reduced by the closing of the military hospital, Chatham, the Alexandra military hospital at Cosham, and the military hospital at Devonport, respectively; what economies had been effected by this reduction; and what reduction in hospital personnel had followed the closing of these hospitals.—Mr. DUFF COOPER (Financial Secretary to the War Office) replied: So far as the War Department is concerned the answer to the first and last parts of the question is that there has been a net reduction of 215 equipped beds and of 15 officers, 15 nurses of the Queen Alexandra's Imperial Military Nursing Service, and 149 other staff. As regards the second part of the question, in addition to economies in beds and staff, the buildings have been set free for other Government purposes or ultimate disposal.

Methylated Spirit Drinking in Scotland.

Mr. BARR asked the Secretary of State for Scotland how many arrests for drunkenness, alleged to be due to the drinking of methylated spirits, were made by the police in

the city of Glasgow during the 12 months ending Oct. 31st, 1927; and the number of such arrests in each of the wards of the city where they took place or, alternatively, the numbers in each of the respective police divisions of the city.—Sir J. GILMOUR replied: The following return shows the number of persons apprehended for being drunk and incapable in the various police divisions of the city of Glasgow, during the year ended Oct. 31st, 1927, whose condition is believed to have been due to the drinking of methylated spirits:—

Division.	Males.	Females.	Total.
Central	63	52	115
Western	86	31	117
Eastern	23	7	30
Southern ..	59	20	79
Northern.. ..	26	8	34
St. Rollox ..	6	3	9
Queen's Park ..	4	—	4
Maryhill	1	—	1
Govan	4	3	7
Partick	7	2	9
Marine	24	6	30
Total ..	303	132	435

Skimmed Milk and Rickets.

Mr. EVERARD asked the Minister of Health whether he had received any reports that the prevalence of rickets among children in some districts was largely caused by the fact that they were being fed on imported skimmed milk which was marked unfit for babies; and whether he would take steps to prevent the use of this commodity as a food for infants.—Mr. CHAMBERLAIN replied: I have seen a newspaper report of a statement of a lecturer on agricultural economics to this effect. I am advised that the feeding of infants on skimmed milk in any form would tend to produce rickets, and it is for this reason that I have made regulations requiring the words "Unfit for babies" to be displayed on the tins. Recently I have issued fresh regulations which will have the effect of displaying these words more prominently.

Mr. EVERARD asked whether in the public interest the right hon. gentleman would publish figures showing the value of English milk as compared with this foreign condensed milk as a clean product?

Mr. CHAMBERLAIN: I do not think it is necessary to publish figures showing the difference between skimmed milk and full milk.

Mr. HARDIE: Is the right hon. gentleman not aware that the people who buy this skimmed milk have no choice, and does he still adhere to the view he gave in answer to a question as to the effect of skimmed milk on rickets?

Mr. CHAMBERLAIN: That does not arise out of the question, but I think the hon. Member has misinterpreted what I said.

Mr. KIRKWOOD: Does the right hon. gentleman not think that it is a libel upon our civilisation that mothers should have to buy this skimmed milk because they cannot afford to buy other milk to feed their babies?

Dr. VERNON DAVIES: Is the right hon. gentleman aware that a lot of this skimmed milk is sold in such small packages that people will buy it whether it is marked "Unfit for babies" or not; and will the right hon. gentleman not issue regulations to provide that this milk shall be sold in very much larger containers?

Mr. CHAMBERLAIN: I must have notice of that question.

Mr. REMER: Is the right hon. gentleman not aware of the growing importation of this skimmed milk and will he not look further into the matter to see whether some other steps cannot be taken to avoid this increased consumption which must be bad for the people who consume it?

Mr. CHAMBERLAIN: I cannot accept that statement. The hon. gentleman seems to consider that children and adults are in the same position. My advice is that though skimmed milk is very bad for infants it may be quite wholesome for adults.

Colonel HOWARD-BURY: Cannot the right hon. gentleman prohibit its sale for infants?

Mr. CHAMBERLAIN: I would do so if I was sure that the prohibition would be adhered to.

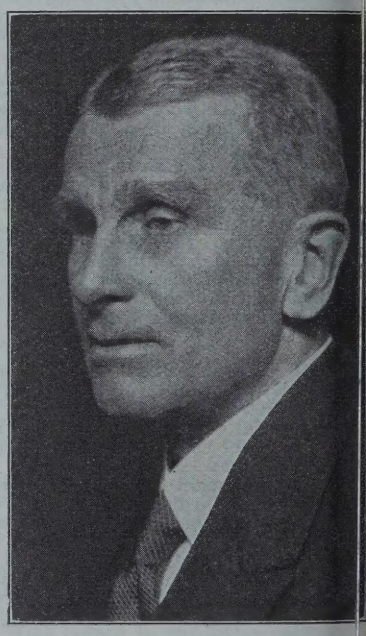
BEGGING LETTERS.—The chief constable of Cardiff informs us that medical men in various parts of the country are receiving begging letters from a person using the name of Jean N. Atherton, whose address is given as 10, Brook-street, Riverside, Cardiff. In a letter which has been forwarded for our inspection the writer requests that a loan should be sent in order to rescue her father from temporary difficulties, represents the family as being in great distress. We are informed that the writer of these letters has been convicted of obtaining charitable contributions by false pretences.

Obituary.

JAMES WHEATLEY, M.D. LOND., D.P.H.

WE regret to announce the death last Saturday Dr. James Wheatley, medical officer of health for t county of Shropshire. His health had failed for so months and he was unable to attend the ann dinner of the Medical Officers of Health, of which was this year president. His loss will be felt beyond the bounds of the public health service, his views on hygienic problems were widely c ceived and had attracted considerable attention.

Dr. Wheatley was educated at King's Colle London, where he held a Clothworkers' exhibiti He qualified in 1886, a year later taking his Lond degree with honours in medicine, his M.D. in 1890, and finally the diploma in public health of the Edinburgh Royal Colleges. After holding house appointments at King's College Hospital and demonstrating anatomy in the College, he went to Blackburn as house surgeon to the Infirmary, and remained there to become superintendent of the fever hospital, police surgeon, and finally medical officer of health. At Blackburn he made a careful study of hygienic conditions in the cotton industry, but it was not long before the offic county medical officer for Shropshire fell vacant, and began in 1901 what proved to be his life work. In ev department of county health work Wheatley m his impression, his name being especially associa with the problems of dental disease, of school hygie and of infant mortality. For many years he collec data regarding the incidence of dental caries in county, and in 1920 he published the result of examination of nearly 50,000 children, comparing condition of their teeth before and after the perio the Great War. While before the war only 5 per c of the under-fives were free from caries, no than 44 per cent. of post-war children showed dental decay, and Wheatley vehemently attribu this improvement to the restriction and modificat of food which occurred during the war, especia as it affected the supply of sugar, bread, and m The consumption of sweets, of highly refined flo and of crustless bread he regarded as the chief ca of dental caries, and he inaugurated a campa on these lines to combat deterioration in the teeth the nation. In regard to infant mortality, altho he admitted as factors in its reduction the scheme child welfare and antenatal care, he satisfied him that the chief effect was brought about by the op tion of the Education Act of 1870 in raising intelligence of the people and the sense of responsibi in parents. So long as education kept ahead material advancement he forecasted continu improvement in the health of mothers and yo



DR. JAMES WHEATLEY.

ildren. His views on public health as a whole ere set out with vigour and eloquence in an inaugural dress last October to the Society of Medical Officers Health. Put in a sentence Wheatley's message was at we cannot afford to interfere with the healthy d vigorous development of body and mind of a ge proportion of the people in order to prevent a w accidents—a new and stimulating conception of lative values in public health work. He refused accept as relevant the outlook of that part of the edical profession whose experience is entirely with k and abnormal persons. The lasting value of edical work must be judged by the improvement in e living of the ordinary individual. In his assessment health factors, Wheatley put in the first place search in its widest sense. He was keenly alive to e enormous benefit to medical practice arising t of modern physiological research, and desired inquiry into the causes of the fall in the death-e from tuberculosis during recent years. This ellectual detachment did not, it may be remarked passing, prevent him taking a large part in founding ounty sanatorium. But only second in importance research he placed the education of the people, ich he felt should be accelerated and made more ective by a vastly improved system of health visitors d district nurses to give instruction in the homes. One of his colleagues in the health service writes: Any profession or calling would be the poorer for loss of a man of Wheatley's type. He was never und by convention or tradition, and his philosophic nd had a refreshing way of throwing new light on problems. While he spoke out his thoughts rlessly, he was tolerant of the views of others, and owed himself a courageous and generous disputant. s kindly personality will be long missed, for he bodied more than most people the characteristics d down in the fifteenth Psalm."

Medical News.

THAMES FLOODS.—On Jan. 16th a conference was d at the Ministry of Health to investigate the flood aster of Jan. 6th and 7th (see THE LANCET, Jan. 21st, 142). The committee then appointed has now issued its ort and recommends that the statutory duty of inspecting d defence works within the county of London should nitely be placed with the County Council. In order to n the public in case of danger it is suggested that an ouncement should be made by the Meteorological Office, r consultation with the Port of London Authorities, n high tides may be expected; that a special watch uld be kept at Southend, warning to be given to the ropriate authorities when the tide reaches a specified t; and that a watch should be kept at selected points, lic notice being given in the locality if the water reaches danger level. The Committee also recommends that slative power should be obtained by the L.C.C. to prohibit erection of new dwellings, or the re-erection of old llings, on land within flood limits, unless their floors up to a specified level; but it recognises that the use of ement rooms for sleeping quarters can only be satisfac-ly dealt with as part of a general housing programme. ere basements do not now comply with the statutory irements, it is recommended that steps should be taken he earliest opportunity to prevent their being used as llings. The Committee has also come to the conclusion the L.C.C. should consider whether special protection uld not be afforded where there is likely to be damage of nusual kind—e.g., from creosote or mineral oil contained anks and barrels near the river.

Dr. W. J. Howarth, who has been medical officer of th for the City of London since 1913, has resigned his tion owing to ill-health. Dr. W. M. Willoughby will tinue to act until a successor has been appointed.

CENTENARY OF THE ROYAL FREE HOSPITAL.—siding at the 100th annual meeting of this hospital, d Riddell announced that the governors intended to brate its centenary by raising £100,000 for the endow-t of the dental clinic which is being provided and equipped Mr. George Eastman, of New York, and a further £210,000 building developments. The building will include "The en Mary Wing," a new maternity department, an nded pathological department, and new kitchens.

BELGRAVE HOSPITAL FOR CHILDREN.—Miss Barwell, matron of this institution at Clapham, is retiring after 29 years' service. In that period the accommodation has increased from 14 to 79 beds.

ROYAL SANITARY INSTITUTE.—A sessional meeting will be held at the Municipal Buildings, Taunton, on Saturday, March 24th, at 10.30 A.M., when discussions will take place on Present Tendencies Regarding Disinfection and on House Refuse Collection.

HARVEIAN SOCIETY.—A clinical meeting of this society was held at the Royal Waterloo Hospital on Feb. 16th, Dr. Herbert French, the President, in the chair. Seven cases were shown by members of the staff of the hospital and two cases by Dr. G. de B. Turtle and Dr. R. Cove-Smith.

PHARMACEUTICAL SOCIETY OF GREAT BRITAIN.—A meeting will be held on Tuesday, March 13th, at 8 P.M., in the Lecture Theatre of the Society's House, 17, Bloomsbury-square, London, W.C., when Dr. H. H. Dale will give an address on Some Reactions of Pharmacology on Pharmacy.

ADRIAN STOKES MEMORIAL FUND.—It is announced that the Rockefeller Foundation has contributed £2000 to each of the two funds being raised at Guy's Hospital and at Trinity College, Dublin, in memory of the late Prof. Adrian Stokes.

UNIVERSITY OF LONDON MEDICAL GRADUATES' SOCIETY.—The first general meeting of this society will be held on Monday, March 12th, at 5 P.M., at the Rooms of the Medical Society of London, 11, Chandos-st., Cavendish-sq., W. The draft constitution and by-laws will be considered.

PROGRESS OF CONTRIBUTORY SCHEMES.—Since the Birmingham Contributory Scheme came into operation on New Year's Day, nearly 1000 firms have joined it, and nearly a quarter of a million workmen have been enrolled.—Some 700 business concerns are now coöperating with the recently established Liverpool Penny-in-the-Pound Fund, and 67,000 people are entitled to treatment.

AN EXHIBITION FOR A HOSPITAL.—Sir Philip Sassoon, hon. treasurer of the Royal Northern Hospital, has this week thrown open his house in Park-lane for a remarkable exhibition in aid of the funds of the institution. Many of the exhibits, which included examples of early English, French, and Italian needlework, furniture, and curiosities had never before been publicly shown. Treasures were lent from such famous houses as Knole, Arundel Castle, and Hardwicke Hall. Among them were the mitre and gloves of William of Wykeham, the coronation gloves of Edward VI., and the vest worn by Mary Queen of Scots at her execution.

DONATIONS AND BEQUESTS.—Mrs. Annie Louise Normandy, Anerley, London, S.E., left £3000 for charities, including £500 to the South-Eastern Hospital for Children, £300 each to the Royal Blind Pensions' Society, the National Society for Epileptics, Vauxhall Bridge-road, and £200 to Norwood Cottage Hospital, the British Home and Hospital for Incurables, King Edward's Hospital Fund, and the Earlswood Institution.—Lady Hudson, G.B.E., has given £3000 to the Westminster Hospital for the perpetual endowment of a ward in memory of the late Sir Robert Arundell Hudson, G.B.E., treasurer of the hospital from 1921 to 1927.

VICTORIA HOSPITAL, CAIRO.—The British Red Cross Society and the Grand Priory of the Order of St. John of Jerusalem have presented a clinic to this hospital, and last week it was opened by Lord Lloyd, British High Commissioner for Egypt. The hospital was founded in 1881 to provide treatment for the British, American, German, and Swiss communities, as well as Egyptians. Lord Lloyd at the same time unveiled in the hall of the hospital a tablet erected by British Freemasons in memory of the late Sirdar, Sir Lee Stack, who, at the time of his assassination, was District Grand Master of Egypt and the Sudan.

THE LATE DR. RAGLAN THOMAS.—The death is reported from Exeter of Dr. John Raglan Thomas, on Feb. 29th, at the age of 72. The son of a Llanelly doctor, he was educated at Epsom College, and entered St. Bartholomew's Hospital with a Gilchrist Scholarship, qualifying M.R.C.S. in 1876. He later graduated as M.B. Lond., with honours in midwifery and proceeded to the M.D. degree in 1887. After house appointments at St. Bartholomew's he succeeded to his father's practice and carried it on for ten years, being appointed medical officer of health for the Llanelly rural district. In 1888, however, he moved to Exeter where he became certifying factory surgeon, Admiralty surgeon, and medical referee under the Workmen's Compensation Acts. Dr. Thomas had many non-medical interests, and was a good shot, being for many years associated with the Volunteers. In 1908 he was Assistant Director of Medical Services for the Wessex Division of the Territorials, from which he retired with the rank of colonel in 1912, being appointed hon. physician to the King. He leaves a widow with two sons and five daughters.

Medical Diary.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.
MONDAY, March 12th.—5 P.M., WAR. Paper: Lieut.-Colonel Ernest Cowell, R.A.M.C. (T.A.): The Pathology and Treatment of Traumatic Wound Shock.
TUESDAY.—5 P.M., THERAPEUTICS. Papers: Dr. G. J. Langley: Clinical Assay of Digitalis. Dr. E. A. Carmichael: Stramonium in the Treatment of Post-Encephalitic Parkinsonism. 8.30 P.M., TROPICAL, PSYCHIATRY, NEUROLOGY, BALNEOLOGY. Special Discussion on Neuroses in the Tropics. Openers: Lieut.-Colonel O. A. R. Berkeley-Hill, I.M.S., Dr. H. S. Stannus.
WEDNESDAY.—5.30 P.M., SURGERY: SUB-SECTION OF PROCTOLOGY. (Cases and pathological specimens at 5 P.M.) Short Papers, &c.: Mr. Cuthbert Dukes: Demonstration of the Pathology of Obstruction Due to Tumours of the Bowel. Mr. W. B. Gabriel: Intestinal Obstruction Following Colostomy. Dr. Arthur F. Hurst: The Recognition, Cause, and Treatment of Megacolon in Adults. Sir Charles Gordon-Watson: A Method of Removing Adenomata of the Sigmoid Through the Rectum.
THURSDAY.—5 P.M., DERMATOLOGY. (Cases at 4 P.M.) Cases: Dr. W. J. O'Donovan: Chronic Exfoliative Dermatitis with Universal Melanodermia and Blood Changes. Other cases will be shown.
FRIDAY.—8.30 P.M., ELECTRO-THERAPEUTICS. Communication: Mr. A. E. Hayward Pinch: The Present Position of Radium Therapy. A discussion will follow.

SOCIETY OF MEDICAL OFFICERS OF HEALTH.
The meeting of the Society of Medical Officers of Health for a discussion on the Control of Small-pox, fixed for March 16th, is postponed until a date to be announced after publication of the report of the Departmental Committee on Vaccination.

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE.
THURSDAY, March 15th.—8.15 P.M. (at the Royal Army Medical College, Millbank), Demonstrations by Dr. E. Hindle, Lieut.-Colonel Clayton Lane, Lieut.-Colonel W. P. MacArthur, Dr. Alan McKenzie, Dr. A. C. Stevenson, Dr. J. Gordon Thomson, Prof. Warrington Yorke, Dr. U. Owen, and Lieut.-Colonel A. C. H. Gray.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, W.
MONDAY, March 12th.—8.30 P.M., Discussion on the Carrier Problem, to be introduced by Dr. J. E. McCartney, followed by Dr. John Freeman.

LONDON CLINICAL SOCIETY.
THURSDAY, March 15th.—8.30 P.M. (at the London Temperance Hospital), Clinical Evening.

EUGENICS SOCIETY.
WEDNESDAY, March 14th.—8.30 P.M. (at the Rooms of the Royal Society, Burlington House), Dr. W. R. K. Watson: Brixton Mental Tests.

BIOCHEMICAL SOCIETY.
FRIDAY, March 16th.—4.30 P.M. (at University College, Gower-street, W.C.), Annual General Meeting: Communications.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS, Pall Mall East, S.W.
TUESDAY, March 13th.—5 P.M., Dr. Izod Bennett: Some Problems of Nephritis. Goulstonian Lecture (1).
THURSDAY.—5 P.M., Goulstonian Lecture (2).

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn-fields, W.C.
FRIDAY, March 16th.—5 P.M., Prof. Sir Arthur Keith: Variations and Anomalies of the Cervical and Costal Series of the Vertebral Column and their Application in Diagnosis and Treatment. Demonstration of Specimens.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith.
MONDAY, March 12th.—10 A.M., Dr. Dowling: Skin Department. 2 P.M., Dr. Trevor Davies: Gynæcological Department.
TUESDAY.—10 A.M., Medical Registrar: Medical Wards. 2 P.M., Mr. Sinclair: Surgical Out-patients. 2 P.M., Mr. Hamblen Thomas: Throat, Nose, and Ear Department. 4.30 P.M., Dr. Shaw (Special Lecture): Abdominal Pain.
WEDNESDAY.—10 A.M., Dr. Burnford: Medical Wards. 2 P.M., Mr. Tyrrell Gray: Operations. 2.30 P.M., Mr. Donald Armour: Surgical Wards.
THURSDAY.—10 A.M., Dr. Grainger Stewart: Neurological Department. 2 P.M., Mr. Simmonds: Surgical Out-patients. 3 P.M., Sir Henry Simson: Gynæcological Ward.
FRIDAY.—10 A.M., Dr. Pritchard: Medical Wards. 12 noon, Dr. Ironside: Clinical Demonstration. 4.30 P.M., Mr. Vlasto (Special Lecture): Clinical Examination of Labyrinthine Diseases.
SATURDAY.—9.30 A.M., Dr. Burnford: Bacterial Therapy Department. 10 A.M., Dr. Owen: Medical Diseases of Children.
Daily, 10 A.M. to 5 P.M., Saturdays, 10 A.M. to 1 P.M., In-patients, Out-patients, Operations, Special Departments. Anæsthetic and Operative Surgery Classes.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION
St. James's Hospital, Ouseley-road, Balham, S.W.
WEDNESDAY, March 14th.—4 P.M., Mr. Norman Lake: The Surgical Dyspepsias.

NORTH-EAST LONDON POST-GRADUATE COLLEGE
Prince of Wales's General Hospital, Tottenham.
MONDAY, March 12th.—2.30 to 5 P.M., Medical, Surgical, and Gynæcological Clinics. Operations.
TUESDAY.—2.30 to 5 P.M., Medical, Surgical, Throat, Nose and Ear Clinics. Operations.
WEDNESDAY.—2.30 to 5 P.M., Medical, Skin, and Eye Clinics. Operations.
THURSDAY.—11.30 A.M., Dental Clinics. 2.30 to 5 P.M. Medical, Surgical, and Ear, Nose, and Throat Clinics. Operations.
FRIDAY.—10.30 A.M., Throat, Nose, and Ear Clinics. 2.30 to 5 P.M., Surgical, Medical, and Children Diseases Clinics. Operations.
On Wednesday and Friday, at 2.30 P.M., there will also be demonstrations of Skin and Medical (Children) Cases by Dr. W. Jenkins Oliver and Dr. C. E. Sunderland respectively.
On Tuesday and Thursday there will also be demonstrations of Surgical Cases and Cases for X ray by Mr. W. H. Tanner and Dr. A. C. Dixon respectively.

NATIONAL HOSPITAL, Queen-square, Bloomsbury.
MONDAY, March 12th.—2 P.M., Dr. Hinds Howell: Out-patient Clinic. 3.30 P.M., Dr. Kinnier Wilson: Epileptic Variants.
TUESDAY.—2 P.M., Dr. Walshe: Out-patient Clinic. 3.30 P.M., Dr. Hinds Howell: Disorders of Sensation.
THURSDAY.—2 P.M., Dr. Kinnier Wilson: Out-patient Clinic. 3.30 P.M., Dr. Bailey: Electrical Testing of Muscles (in Out-patient Department).
FRIDAY.—2 P.M., Dr. Adie: Out-patient Clinic. 3.30 P.M., Sir Percy Sargent: Cervical Ribs.

HOSPITAL FOR SICK CHILDREN, Great Ormond-st., W.
THURSDAY, March 15th.—4 P.M., Dr. W. G. Wyllie: Nephritis in Children.

CENTRAL LONDON THROAT, NOSE AND EAR HOSPITAL, Gray's Inn-road, W.C.
WEDNESDAY, March 14th.—4 P.M., Consultations.
FRIDAY.—4 P.M., Mr. Gill-Carey: Focal Sepsis in the Nose and Throat.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.
TUESDAY, March 13th.—5 P.M., Dr. Wilfrid Fox: Nævi.
THURSDAY.—5 P.M., Pathology Demonstration.

ST. PAUL'S HOSPITAL, Endell-street, W.C.
THURSDAY, March 14th.—4.30 P.M., Mr. W. K. Irwin: Pain in Genito-urinary Affections.

ROYAL INSTITUTE OF PUBLIC HEALTH, 37, Russell-square, W.C.
WEDNESDAY, March 14th.—4.30 P.M., Dr. R. Donaldson: Bacteriology in its Connexion with Forensic Medicine.

PEOPLE'S LEAGUE OF HEALTH.
WEDNESDAY, March 8th.—6 P.M. (at the Medical Society's Rooms, 11, Chandos-street, Cavendish-square, W.), Dr. A. F. Tredgold: Mental Deficiency.
FRIDAY.—6 P.M., Prof. V. H. Mottram: Common Errors in Diet.

ANCOATS HOSPITAL POST-GRADUATE LECTURES, Mill-street, Manchester.
THURSDAY, March 15th.—4.15 P.M., Dr. Langley: Exophthalmic Goitre.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE COURSE.
TUESDAY, March 13th.—4.15 P.M., Dr. F. E. Tylecote: Calcium Therapy.
FRIDAY.—4.15 P.M., Mr. J. Morley: Demonstration of Surgical Cases.

UNIVERSITY OF SHEFFIELD POST-GRADUATE CLINIC
FRIDAY, March 16th.—3.30 P.M., Mr. Brockman: Thyroid Cases.

Appointments.

BARRON, H. THOMPSON, M.D. Lond., M.R.C.P. Lond., has been appointed Assistant Physician to the Skin Department, Westminster Hospital.
GROVES, E. W. HEY, M.D., M.S. Lond., to be one of the Medical Referees under the Workmen's Compensation Act for the districts of the Bristol, Wells, Weston-super-Mare, and Yatton County Courts.
NICOL, W. W., M.B., Ch.B. Aberd., Certifying Surgeon under the Factory and Workshop Acts for the Inverurie District of the County of Aberdeen.
RUDDOCK-WEST, T., M.D., Durh., D.P.H., Medical Officer of Health for the County of Norfolk.

Vacancies.

For further information refer to the advertisement columns.
Albert Dock Hospital, Connaught-road, E.—Res. M.O. At rate of £110.
Ayr County Hospital.—Sen. and Jun. H.S.'s. At rate of £100 and £80 respectively.
Belfast, City and County Borough of.—Med. Supt. Officer of Health and Port Medical Officer. £2000.

Birmingham and Midland Ear and Throat Hospital.—Second H.S. At rate of £150.
Birmingham and Midland Homœopathic Hospital and Dispensary. Hon. Anæsthetist and Hon. Consulting Ophth. S.
Brighton Borough Infectious Disease Hospital and Sanatorium.—Res. M.O. £350.
Cambridge, Addenbrooke's Hospital.—H.S. At rate of £130.
Charing Cross Hospital.—Surg. Reg. £150. Also Asst. Surg.
Connaught Hospital for Walthamstow, Wanstead, and Leyton, Walthamstow, E.—Hon. Radiologist. Also Sen. and Jun. Res. H.S.'s. At rate of £150 and £100 respectively.
Croydon General Hospital.—Cas. H.S. £125.
Dreadnought Hospital, Greenwich.—H.P. At rate of £110.
East London Hospital for Children and Dispensary for Women, Shadwell, E.—Asst. S.
Hereford County and City Mental Hospital.—Second Asst. M.O. £350.
Hospital for Tropical Diseases, Endsleigh-gardens, W.C.—H.P. At rate of £135.
Hospital for Women, Soho-square, W.—Res. M.O. At rate of £100.
King's College Hospital, Denmark-hill, S.E.—Two Jun. Surgeons. Also Jun. P. for Dis. of Children.
Liverpool Open-Air Hospital for Children, Leasowe.—Jun. M.O. £200.
London Homœopathic Hospital, Great Ormond-street, W.C.—Fourth Anæsthetist. £50.
Manchester, Ancoats Hospital.—Clin. Asst to Ear, Nose, and Throat Dept. 10s. 6d. per clinic.
Manchester, St. Mary's Hospitals, Whitworth-street.—Four H.S.'s. Each at rate of £50.
Montana, Switzerland, Palace Sanatorium.—Asst. Phys. £400.
Newcastle-upon-Tyne, Hospital for Sick Children.—Jun. H.S. At rate of £100. Also Res. H.P. and Res. Sen. H.S. Each at rate of £95.
Nigeria, Medical Research Institute.—Biochemist and Protozoologist. £800.
Rochdale Infirmary and Dispensary.—Jun. H.S. £200.
Royal Dental Hospital of London, 32, Leicester-square, W.C.—House Anæsthetist. £200.
Royal Northern Hospital, Holloway, N.—H.P. and Obstet. H.S. Each at rate of £70.
St. Mary's Hospital, Institute of Pathology and Research.—Research Studentship. £200.
Salford Royal Hospital.—Two H.S.'s. Each at rate of £125.
Shanghai Municipal Council.—Second Asst. Commissioner of Public Health. Taels 600 per mensem.
Sheffield Royal Infirmary.—Ophth H.S. At rate of £80.
West London Hospital, Hammersmith, W.—H.P. and two H.S.'s. Each at rate of £100. Hon. Med. Reg. £100. Also Hon. Anæsthetist.
Westminster Hospital, Broad Sanctuary, S.W.—Asst. Surg. Reg. At rate of £50.
Weston-super-Mare Hospital.—Res. M.O. £130.
Willesden General Hospital, Harlesden-road, N.W.—Res. H.S. At rate of £100.
Windsor, King Edward VII. Hospital.—Hon. Ophth. S.

The Chief Inspector of Factories announces vacancies for Certifying Factory Surgeons at Haltwhistle (Northumberland), Erith (Kent), Exeter (Devon), and at Bervie (Kincardineshire).

Births, Marriages, and Deaths.

BIRTHS.

DAY.—On Feb. 26th, to Marjorie Semple, M.B., wife of William Day, Jun., College-road, Maidstone—a son.
FISHER.—On Feb. 27th, 1928, at a nursing home, to Grace, wife of Alfred George Timbrell Fisher, *M.C.*, F.R.C.S. Eng., of 59, Montagu-square, W.1—a daughter.
GABRIEL.—On Wednesday, Feb. 29th, at Colville, Gerard-road, Barnes, the wife of W. B. Gabriel, F.R.C.S., of a son.
VINER.—On Feb. 25th, at Chorley Wood, Herts, to Mona (née de la Mare), wife of Geoffrey Viner, F.R.C.S., of 27, Queen Anne-street, W.1—a son.

MARRIAGES.

AMIES—SPEIRS.—On Feb. 27th, at St. George's Church, Croydon, Cleeve Russell Amies, M.B., B.S., M.R.C.S., L.R.C.P., D.T.M., D.T.H., Malayan Medical Service, to Muriel, daughter of Mr. and Mrs. John Speirs, of Ashburton-road, Croydon.
LEE—COSTELLO.—On Feb. 28th, at St. Thomas's Church, Stockton Heath, Warrington, Major Robert Lee, I.M.S., to Frances Maureen, daughter of the late Mr. and Mrs. John Costello, of Tipperary, Ireland.

DEATHS.

FLETCHER.—On March 3rd, at Sudbury Farm House, near Harrow, Cavendish Fletcher, M.B., B.S. Lond., M.R.C.S., L.R.C.P.
JERMAN.—On Feb. 25th, Arthur Edward Jerman, M.B., D.P.H., T.D., late Lieut.-Col., R.A.M.C., T.F., for 24 years M.O.H. of Erith and district, aged 55.
PORTER.—On Feb. 27th, at The Avenue, Beckenham, Kent, Major-General Sir Robert Porter, K.C.B., C.M.G. (late R.A.M.C.), aged 70.
RIGDEN.—On Feb. 28th, at Alumhurst-road, Bournemouth, Walter Rigden, M.D.
SICHEL.—On Wednesday, Feb. 29th, at Vine House, Sevenoaks, Gerald Theodore Silvester Sichel, F.R.C.S., late Surgeon, R.N.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

THE CONTRIBUTION OF CHRISTIAN THOUGHT TO THE SCIENCE AND PRACTICE OF MEDICINE.

An Address delivered at the Dedication of the Pillar of Healing in St. Anne's Cathedral, Belfast,*

BY HAROLD BALME, F.R.C.S. ENG., D.P.H.,
FORMERLY PROFESSOR OF SURGERY IN, AND PRESIDENT OF, THE SHANTUNG CHRISTIAN UNIVERSITY, CHINA.

The Problem of Pain.

FROM the earliest days of human life on earth, the problem of pain and sickness has challenged the thought and faith of humanity. The mysteriousness of its origin; the uncertainty of its outcome; the crippling results of its ravages—these are some of the factors which constitute the essence of the problem, and which, in all ages, and amongst all people, have led to the same unanswered questionings as to the ways of God. There has always been something so inexplicable, so baffling, so portentous, about the onset of disease, and it is little wonder that it has readily given birth to nervous dread and apprehension, and has led to every kind of superstitious practice. Totem worship and secret cult, hidden charm and magic potion, votive offering and weary pilgrimage—all bear witness to the same pathetic efforts to appease an angry spirit, to ward off some noxious influence, or to counteract some unknown and impalpable evil, thus restoring health and vigour to a loved one. It has needed the vision of an Elizabeth Browning to see that—

> "Knowledge by suffering entereth,
> And life is perfected by death." [1]

or the inspiration of John Keats—once apprenticed to a surgeon—to appreciate the necessity of a world of pains and trouble, in order, as he put it, "to school the intelligence and make it a soul." [2] It has needed the genius of a Mrs. Hamilton King to ennoble suffering as an act of worship, of fellowship, and of needed discipline, so that men could say—

> "How poor were earth if all its martyrdoms,
> If all its struggling sighs of sacrifice
> Were swept away, and all were satiate-smooth:
> If this were such a heaven of soul and sense
> As some have dreamed of—and we human still.
> Nay, we were fashioned not for perfect peace
> In this world, howsoever in the next:
> And what we win and hold is through some strife." [3]

But not many have risen to such heights. To the vast majority sickness and pain have been twin spectres of dread omen, understood by few and feared by all.

The Contribution of Greek Thought.

It is part of the glory of the golden age of Greece that the leaders of that period—those "fearless mariners on the uncharted sea of thought," as Prof. Angus calls them [4]—dared to probe into the mysteries of disease, and succeeded in lifting the science and practice of medicine on to an entirely new plane of human endeavour. Two streams of thought converged upon the problem, the one religious, the other intellectual and scientific, but each flowing in complete harmony with the other. The religious stream had its fount of origin in the ceremonies associated with the worship of the God-physician Æsculapius—reputed son of the divine Apollo and the human maiden Coronis—and found its inspiration, for the most part, in the teachings of the old mystery religions, with their emphasis upon a benevolent, though remote, Deity, their yearning for redemption, and their idealisation of a beautiful body enshrining and harmonising with a beautiful mind.

The intellectual stream was the natural product of an age which bore such acute and accurate minds as those of Herodotus and Sophocles, Thucydides and Aristophanes, Socrates and Plato—all of them, be it remembered, contemporaries of him whom we have come to speak of as the Father of Medicine, Hippocrates of Cos. Looking back, as we do to-day, after the lapse of nearly 2400 years, it is easy to fall into the mistake of regarding Hippocrates as though he were some amazing human comet, born out of due time, and flashing upon his generation a brilliance of thought and intuition of incomparable splendour. But such was not entirely the case. Great pioneer as he undoubtedly was, Hippocrates was also, on the one hand, an inheritor

* The address will be issued as a booklet by the Student Christian Movement, 32, Russell-square, London, W.C. 1. Price 6*d.* through any bookseller.

of the trained observations of physicians like Democedes, or the generation of men who gave to Homer his accurate knowledge of anatomical detail, whilst on the other hand, he was a sharer in the intellectual stimulus of the great thinkers of his day.[5] The genius of Hippocrates lay in his power to build upon this foundation, to project into the physical sphere the same independent and fearless thinking as characterised the philosophers of his age, and thus to erect an edifice of scientific thought based upon close observation of natural processes and meticulous attention to clinical symptoms, and inspired with high idealism and lofty ethical code. In this way Hippocrates, and the school which succeeded him, made an invaluable contribution to medical progress. They delivered the investigation and treatment of disease from blind empiricism and superstitious priest-craft, they proclaimed to the world that all physical disorders were subject to natural laws, and they inspired the profession with a noble quest for ultimate truth and a lofty conception of ethical conduct.

And yet, as Sir William Osler used to remind us, although "the tap-root of modern science sinks deep into Greek soil," Hippocrates, with all his genius, did not go beyond highly trained observation and a conception of disease as a process of Nature,[6] whilst the religious thinking of the Greeks was largely pessimistic in outlook, knew nothing of conscience, nothing of a conception of the Kingdom of God, and possessed but little interest in the fate of mankind.[7]

The Coming of Jesus Christ.

It was thus to a world of mysterious suffering for which Grecian culture and piety could find no adequate solution, and to which the best religious thought of Judea had no higher interpretation to offer than that of "the fathers eating sour grapes and the children's teeth being set on edge,"[8] that the Son of Man came; and with His coming our whole conception of sickness and disease has been utterly transformed, and an entirely new motive in life provided. Christianity "lives by the glowing hope of a better world," to quote Albert Schweitzer's splendid phrase, and while Græco-Oriental mystery religions could only bid men "free themselves from the world," Jesus was telling them to get free in order to work in the world, in the spirit and in the love of God.[9]

Of the profound mystery of the Incarnation we shall never, perhaps, discover the full meaning, but one aspect of that mystery is patent to all eyes, for it lies illumined on every page of the gospel record. The Incarnation meant identification with common humanity, in all its frailty, its suffering, and its physical limitations. We see this sublime wonder in every detail of Our Lord's life among men—in the infinite tenderness with which He "bare our infirmities" and entered into the sorrows of the afflicted, as in the exquisite sympathy which compelled Him to stretch out His pure hands to touch the loathsome leper, and which made it impossible for Him to deafen His ears to the appeal of a Syrophœnician mother, or to pass, unheeded, the cry of a blind Bartimæus.

We see it anew in His solicitous care for the "little maid" whom He bade to arise from her deathbed, in His chivalrous concern for the sisters of Lazarus, in the "virtue" which goes out of Him as He heals the woman who touched the hem of His garment. But most of all we see it in His own experience of physical pain, in the bloody sweat which dropped from His brow in the night-vigil of the Garden, in the agony of martyrdom which drew from His lips those impassioned cries on the Cross of Calvary. "He shared pain," as T. R. Glover says in his "Jesus of History," "He sympathised with suffering; and His understanding of pain, and, above all, His choice of pain, taught men to reconsider it and to understand it, and altered the attitude of the world toward it."[10]

But it was not alone by His sharing of human suffering that Jesus has changed our conception of disease and pain. He did far more than this, for He brought to the world an entirely new revelation of God and of Man. Instead of a remote Deity, infinitely just and righteous, but far removed from the sorrows of humanity, Jesus Christ came to reveal a God Who was clothed with personality, a Father Whose whole being was Love, and One in Whose sight the most insignificant of His creatures possessed infinite worth. The God of Jesus was a God Who cared intensely for the welfare and happiness of His children, One Who planned for them a complete redemption of body, mind and spirit, and Who called them into the fellowship of the divinest of all services—the creation of a brotherhood of which Christ Himself should be the firstborn.[11] This was the evangel which Jesus Christ brought to the world, and it is in the inspiration of that message that numberless men and women have gone forth to lives of heroic endeavour and splendid sacrifice.

Let us now attempt to discover how far these new conceptions have affected the course of medical progress and have influenced the science and practice of medicine. We shall find traces of that influence in at least four different directions.

A New Valuation on Human Life.

In the first place, the Christian view of a God-controlle world has placed a new valuation on human life and pe sonality, such as is found in no other religion, and it is ou of this new sense of values that our hospital system, an all that is associated with the care of the sick and helples have sprung. "The chief glory of mediæval medicine, writes Dr. F. H. Garrison in his History, "was undoubtedl in the organisation of hospitals and sick nursing, which ha its origin in the teachings of Christ. For while the germ the hospital idea may have existed in the ancient Babyloni custom of bringing the sick into the market-place, f consultation as it were, and while the Iatreia and Asclepe of the Greeks and Romans may have served this purpo to some extent, the spirit of antiquity towards sickness ar misfortune was not one of compassion, and the credit ministering to human suffering on an extended scale belon to Christianity."[12]

It was during the reign of Constantine that the Asclepe were closed, along with other temples, and it was short after this time that the movement to found and bui hospitals sprang up—a movement in which Helena, t mother of Constantine, is said to have taken a promine part. In the year 369 one of the first of these institutio was established at Cæsarea by St. Basil, with hospital f the sick and houses for physicians and nurses. Six yea later a large hospital of 300 beds was opened at Edessa f plague-stricken patients, whilst a variety of philanthro institutions were founded, each with its separate title, f different classes of needy and destitute sufferers. Western Europe the first "nosokomeion"—as the ordina hospital came to be called—was established about A.D. 4 by Fabiola, a Christian lady of Rome, its purpose being, St. Jerome informs us, "to gather in the sick from the stre and to nurse the wretched sufferers, wasted with pover and disease." It was the religious orders and fraterniti which were growing up in the Christian Church at this tin which founded and maintained these institutions, whe as Mrs. Hamilton King beautifully describes it:—

> "A small part only of the house served
> The brethren's needs; but all the larger rooms,
> Lofty and bare, they made their hospital,
> In which by night and day they ministered
> Unto their sick: and these were always full.
> And all of them had diligently learned
> The art of healing, and among them were
> Some surgeons and physicians much expert."[13]

From the thirteenth century onward this practice mercy has overflowed the borders of the Christian Chur and has gradually permeated the whole of our national l so that we no longer think of hospital practice as a du confined to religious bodies. But let us never forget th the instinct which impels men and women to-day to to the help of the sick and wounded, the instant respo to a call of need which drove aviators and sleigh-driv hundreds of miles last year, in the teeth of a sixty-mile-p hour blizzard, to take antitoxin to the diphtheria patients far Alaska, the compelling force which leads a sea capt to change his course in order to carry medical aid to so sick man on the ocean—these instincts all find their ori in the new valuation of human life and sacrifice which Red Cross flag for ever symbolises.

Nor is this new valuation of human life confined to physical nature of man, for the very heart of Christ's mess was His insistence on the essential unity of all parts of ma being, physical, moral, and spiritual, and on the need of e for that complete redemption which He had come to bri By its insistence on this unity, and on the influence wh body, mind, and soul exerts the one upon the other, Christ thought has concentrated attention on a vital fact, importance of which is being recognised more and m to-day by every guild of health and by every student medico-psychology.

A New Motivation for Medical Research.

In the second place, it may fairly be claimed that quest for truth, which, as we have seen, has come down to as a magnificent legacy from the Grecian school of thoug has received a new connotation as a result of the life teachings of Jesus Christ. To the man who has caugh vision of the full significance of life as Jesus saw it, or w all unconsciously perhaps, has come under the pervad influence of His teaching, this quest becomes a verita crusade, the end of which is not a mere discovery of hith unknown facts, but the forging of a new weapon with wh to alleviate the sufferings of a stricken humanity. "I co shout for joy," writes Walter Reed to his wife, as he succ fully concluded his important investigation of yellow fe at Panama. "The prayer that has been mine for 20 ye that I might be permitted in some way, or in some time alleviate human suffering, has been granted."[14]

It is a thrilling story, this patient search for the causa and cure of disease. "To wrest from nature the sec

which have perplexed philosophers in all ages, to track to heir sources the causes of disease, to correlate the vast stores f knowledge that they may be quickly available for the revention and cure of disease—these are our ambitions," eclares Osler in one of his noblest addresses,[15] and in these pt words he gives us the life-history of that splendid corps f scientific investigators to whom the whole world stands ebtor to-day. William Harvey, the man who avowed imself "the partisan of truth alone," diligently tracing ut the circulation of the blood; old Antony Leeuwenhoek, he Dutch draper, grinding the first lenses which revealed he existence of micro-organisms, and paving the way for he brilliant achievements of a Louis Pasteur in France, Joseph Lister in Britain, a Robert Koch in Germany; lumphry Davy and Horace Wells, Morton, Jackson, and ur own great-hearted James Simpson, all sharing in the iscovery of anæsthetics, those God-given drugs which nable the surgeon of to-day, in Weir Mitchell's immortal hrase, "with God-like will to decree the death of pain"[16]; averan, finding the malaria parasite, and Manson and Ross nd Grassi, after infinite labour, completing the whole story malarial infection and its cure; Castellani and Sambon erforming the same service in the case of sleeping sickness; arroll and Lazear, Reed and Gorgas, ridding the world of s fear of yellow fever, as Jenner had rid it of the peril of nall-pox; James Mackenzie, working in humble obscurity r 20 long years at those laborious researches which have volutionised our knowledge of cardiac disease; Ehrlich, at great plodding genius, adding experiment to experiment til he presents humanity with a means for destroying thogenic spirochætes.

So might we continue, for the tale is not half told of the en and women whom the profession loves to honour, to y nothing of that still larger army of "silent workers who, ten unknown and neglected by their generation, kept ve the fires on the altars of science, and have so opened e doors of knowledge that we now know the laws of alth and disease."[17]

An Inspiration to Heroic Service.

In the third place, may we not say that the tradition nich has come down to us from the sacrificial life of Jesus rist has been one of the most potent factors in inspiring n and women to undertake hazardous and devoted acts service for their fellows, with utter disregard of personal nger? The roll of honour of the medical profession, and its sister-profession of nursing, is a record of which we may ll feel proud, including, as it does, not only the names of se who have actually given up their lives in the pursuit science and the service of humanity, but also of hundreds re who "jeoparded their lives unto the death in the h places of the field."[18]

Emblazoned on that roll are the names of scores of entists who gladly risked life and health and reputation the course of their research—Haffkine, inoculating iself with his own plague and cholera vaccines before he uld risk the lives of others; Carroll and Lazear, subtting to the bites of the venomous yellow fever-bearing squitoes (an act which cost Lazear his life); Prowazek, Russian investigator, perishing of typhus fever from the e of an affected louse; Thuillier, of the French Comision, carried off by cholera in the midst of his investigation the terrible epidemic of 1883; Joseph Dutton, dying the Congo whilst tracking the causation of sleeping kness. We think also of the sublime moral courage of steur, as he staked his great scientific reputation on the cess of those experiments which were to mean so much a suffering world; of Lister, with "faultless patience unyielding will"[19] calmly facing ostracism and ridicule his fight for the mastery of sepsis; of Hall Edwards and cker, of Bergonié and the scores of other physicians and ntists who have suffered the loss of limbs or of life itself ilst experimenting with the all-powerful Rontgen rays.

nd what shall we say of the men and women who have ed their all in the common service of suffering humanity—David Livingstone, shaking with fever as he tramped ough the African jungle; of Pennell, dying with septicia in the attempt to save the life of a beggar on the han frontier; of Wilfrid Grenfell, battling with Arctic rms on the Labrador coast; of Elsie Inglis, dying of r exhaustion after her magnificent service to the stricken bians; of Edward Wilson, Scott's "best of comrades and nchest of friends" on the immortal South Pole Expediti; of Albert Schweitzer, gladly surrendering a world-e reputation as theologian and musician in order to our the dwellers in the primeval forest; of Father nien and Arthur Jackson; of Florence Nightingale and th Cavell? And what of that gallant company of surgeons nurses of all nationalities who performed incredible s of valour and of endurance as they tended the wounded ng the Great War? The line of medical and scientific es in the cause of humanity has never been broken, as we bow our heads in reverent memory of those who willingly gave up their lives in this royal service, we can use no more fitting words than those of the great epic of the eleventh of Hebrews: "These all died in faith, not having received the promises, but having seen them afar off. . . . Of whom the world was not worthy"

A Compelling Sense of Trusteeship.

But there is a fourth contribution which Christian thought has made to the science and practice of medicine, and one which is perhaps the greatest of all. It is the conviction of trusteeship which characterises every true scientist and physician and nurse, both with regard to the knowledge which they have acquired by individual effort, and also the ability to alleviate suffering and cure disease which training and experience have placed in their hands.

We have only to look round the world to-day, and especially those portions of it which have not yet come under the dominance of Christian teaching, to realise how much we owe, in our public life and in our social relationships, to this essentially Christian conception. In every act of Our Lord's crowded days, as well as in the profound lessons which He gave to His followers, we find repeated emphasis on this divine view of life. It forms the central theme of the symphonic music of Christ's last recorded parables—those striking word-pictures of the Ten Virgins, the Talents, and the Sheep and Goats. The failure of the maidens who had no oil in their vessels, of the steward who so carefully wrapped up his master's talent in a secure place of concealment, of the respectable company who were not interested in philanthropic efforts—what was it but an essential failure in trusteeship; for the lamps were entrusted to them for the purpose of shedding light in the dark watches of the night, the talent was intended for investment and profit, whilst the hungry and naked, the sick and imprisoned, whom the busy passed so heedlessly by, were no other than the little brothers of Our Lord.

To the medical and nursing professions there has been given, in no ordinary measure, this conviction of trusteeship, largely as a result of the influence of Christian thought, and never perhaps has this been acknowledged in more beautiful or adequate language than that employed by him whom we love to call the Father of British Clinical Medicine, the great Puritan doctor, Thomas Sydenham. Writing in 1666—the year preceding the publication of Milton's "Paradise Lost"—Sydenham prefaces the first edition of his monumental work on "The Cure of Fevers" with these noble words—his "*religio medici*," as Sir George Newman calls it:—

> "Whoever applies himself to medicine should seriously weigh the following considerations: first, that he will one day have to render an account to the Supreme Judge of the lives of sick persons committed to his care. Next, whatever skill or knowledge he may, by the divine favour, become possessed of, should be devoted above all things to the glory of God, and the welfare of the human race. Moreover, let him remember that it is not any base or despicable creature of which he has undertaken the care. For the only-begotten Son of God, by becoming man, recognised the value of the human race, and ennobled by His own dignity the nature He assumed."[20]

Thus, throughout the ages, as we trace the whole wonderful story of medical progress, we see, in countless ways, the pervading influence of the Divine Son of Man; and though we readily acknowledge that many of those to whom we owe unbounded gratitude for their magnificent contributions to the march of science would hesitate to claim for themselves the title of Christian, we cannot fail to see, in their lives and in their character, the reflection of Him Who came not to be ministered unto but to minister, and to give His life a ransom for many.

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MATERNAL MORTALITY.

AT a conference held at the Central Hall, Westminster, on Feb. 28th, under the presidency of Dame Edith Lyttleton, a message was read from the Queen, expressing her concern at the continued high maternal mortality-rate and her conviction that concerted action should be taken. The following resolution was afterwards proposed from the chair and carried unanimously:—

This meeting recommends: That steps should be taken to obtain a medical inquiry into every maternal death due to childbirth; that the attention of the authorities responsible for the education of medical students should be drawn to the need for further training and experience in midwifery as a preliminary to general practice in medicine; that an official committee should be set up to advise upon the whole question of the training and employment of midwives; that action should be taken in every area to induce all local authorities to make their maternity services adequate; and that the provisions of the National Health Insurance Acts should be readjusted and extended so that medical and midwifery services should be available for mothers both for antenatal care and during and after confinement.

Dr. J. S. Fairbairn, during the discussion, said he would have preferred a greater degree of emphasis on the need for research which he regarded as the crux of the whole matter. Puerperal fever was the cause of at least one-third of all deaths connected with childbirth, and there were many points about it which were still obscure—how far it was due to infection already in the woman herself, in how many cases it was carried to her by the attendant, how resistance varied in different patients and in the same patient at different times, and so on. He set great value on midwifery as the foundation of a good maternity service. In all branches of medicine the first object was to secure natural function, and the midwife has an important share in promoting natural childbirth. The women themselves should be made to realise that there was a price to be paid for shortening their time of trial. Morbidity increased where interference with the course of Nature was practised. Great advances had been made in the training of midwives, and Dr. Fairbairn specially commended those cities, such as Newcastle, Birmingham, and Leeds, in which the Universities had taken it up. This gave the students the great advantage of having specialist lecturers and demonstrators instead of being dependent on one or two teachers for their whole course.

The importance of research was again dwelt upon by Dr. Ethel Bentham, but she urged that research should cover not only the circumstances of confinement, but the whole surroundings of the woman. There were two unfortunate gaps in the health service, one between the ages of 14 and 16, and the other at the early part of married life. During a period of 12 years' work at antenatal clinics Dr. Bentham had seldom seen a perfectly healthy young woman among those who came for examination.

Several speakers pleaded for better training of medical students. One or two who had had experience of country districts pointed out that it was no good telling the women they ought to have antenatal care if the local practitioners were either incompetent or unwilling to give it, and that antenatal clinics, specialist care, and hospital accommodation were alike worthless unless the local doctors were ready to avail themselves of the facilities offered.

MAJORCA AS A HEALTH RESORT.

To the Editor of THE LANCET.

SIR,—For some years past the number of foreigners coming to Majorca has been increasing. While many of these are tourists of the variety who wish to "do" the island in so short a time, and with so little fatigue to body and brain as possible, many stay for the winter months and a good number are invalids, sent out by doctors from more inclement regions to enjoy our equable climate, where during the winter the temperature is very rarely below the freezing-point, it never snows, and there are few rainy days. I wish to draw attention to a few of the conditions for which this island is suitable and to a few for which it is not as a rule desirable.

It has already been pointed out by medical writers that Majorca is peculiarly good for cases of arthritis, sciatica, gout, and the various ailments vaguely termed rheumatism. For all such ailments a dry sunny climate, such as we enjoy here, is almost invariably very beneficial. Sea-bathing can be indulged in, even by invalids, from April onwards, and is often extremely useful as an adjunct to open air and sun treatment. The island has a reputation, many centuries old, for being a good place for asthma, and, though not always suited to all cases, many of these patients do well, and bronchitics nearly always improve. On the other hand, the climate frequently does not suit cases of pulmonary tuberculosis, quite apart from the fatigue of the long journey and the inadvisability of sending such patients a long way from home. Patients who suffer from dyspepsia, gastritis, or other digestive troubles, if they intend to make a long stay, should take a house or flat, as Spanish food is apt to disagree with English people. Mallorquin cooks soon pick up English methods of cooking, and as a rule they cook well. For sufferers from habitual constipation this island is excellent; we have abundant supplies of good fruit and vegetables all the year round, much of the cooking is done in oil (our olives are famous), and in addition to these aids to evacuation there is hardly a day when it is not possible to take exercise, not only in the open air but in sunshine.

Palma itself is not a good place for organic heart affections; there are not many flat walks: there are no gardens or public parks to walk or sit in, and the patient who is unequal to walking up hill does not get much exercise. The bays of Pollensa and Alcudia give plenty of scope for walking on the flat, as well as for boating and sea-fishing, and there are hotels at both these places.

The climate of Majorca, the clearness of the air, the wonderful beauty of much of the sea coast, all make it an exceptionally good seaside place for a winter rest-cure for those to whom a winter in England means a period of staying indoors, if not actually ill, at least unable to brave the rigours of fog, snow, and east winds.

I am, Sir, yours faithfully,

P. GIMÉNEZ OLIVEROS.

Palma, Majorca, Feb. 19th, 1928.

NEW PREPARATIONS.

Magnolax Brand (Wampole) is an emulsion of the liquid paraffin of the British Pharmacopœia and of hydrate of magnesia; it contains no addition of laxative drug, sugar, or alcohol, and its action is to maintain easy and thorough evacuations. The preparation is made in Canada by Messrs. H. K. Wampole Company, of Perth, Ontario, and is distributed through Newbery's Agency, 31-33, Banner-street, London, E.C. Not being absorbed at all, it is regarded as safe in all circumstances, an interesting claim being supported for its value as a laxative in pregnancy, where the doses must be regulated by the physician in charge.

Felsol is a colourless crystalline powder, acid in reaction and easily dissolved in warm water. It is put on the market by the British Felsol Co., Ltd., 29, Red Lion-square, London, W.C., who have obtained considerable direct evidence from British practitioners of its value in the treatment of bronchial asthma and chronic bronchitis. It contains iodopyrin, antipyrin, and caffeine, and is supplied in powders whose contents are regulated so that one, or perhaps two, powders are generally required to check the asthmatic attack, it being suggested that the second powder should not be given till after an interval of two or three hours. The remedy can be taken in gradually decreasing doses as the patient recovers, and the doses can be increased where the condition is severe or obstinate; but instructions accompanying the powders give the wise warning that all such general directions are subject to special prescription by the doctor in attendance. We learn that nine special and general hospitals, two of them being well known and large London institutions, have made successful trial of the preparation.

CARE OF DUBLIN SCHOOL-CHILDREN.

Dr. Mary O'Leary, one of the recently appointed medical inspectors of school-children for the city of Dublin, has been giving to a newspaper representative a description of her work and some of her first impressions. She said that there was a three-fold object in the work: (1) to discover diseases and defects in school-children, (2) to arrange for the cure or correction of these, and (3) to prevent disease. The last was the most important of the three. In the two months during which the two inspectors had been at work 3000 children had been examined. Of these 80 per cent. had some defect, most of which could have been prevented. Ten per cent. had eye trouble and 60 per cent. decayed teeth. Children with minor deformities, such as rounded shoulders, curvatures due to faulty position, and mouth breathers and stammerers were taught simple exercises for the correction of these defects. During each child's examination a simple health talk, suitable to the child, was given. A list of "backward" children was being made, and it was hoped that in time special classes could be formed for them in which manual instruction could be given, and the children, even if remaining almost illiterate, might be made self-supporting. The children were examined in three groups: (1) entrants, 5 to 6 years; (2) intermediate, 8–9; (3) leavers, over 12. In this way every child would be examined three times during his school life.

AN AID TO DEFÆCATION.

Dr. E. P. LEAVY (Innisfail, Queensland) writes: Of the many "urges" known to the constipated might I suggest a final psychic one after the failure of the various "Walcher positions"—viz., the crushing and rolling effect of paper preparatory to its use.

Goulstonian Lectures

ON

SOME PROBLEMS OF NEPHRITIS.

The First Goulstonian Lecture in 1928 delivered before the Royal College of Physicians of London on March 13th

BY T. IZOD BENNETT, M.D. LOND.,

FELLOW OF THE COLLEGE; PHYSICIAN TO OUT-PATIENTS, MIDDLESEX HOSPITAL, AND TO THE ROYAL NATIONAL ORTHOPÆDIC HOSPITAL.

LECTURE I.—THE PROBLEM OF URÆMIA.

THE more one studies nephritis, the more is one aware of the extreme complexity of the subject, and any attempt to review the problems of uræmia must be tentative, although I feel that recent work has thrown new light on the mechanism governing some of the phenomena which we group together under this heading. A great variety of symptoms is by different writers included under the heading of uræmia, and at the outset I feel we must make distinction between those which occur where both ureters became simultaneously blocked, or when a single functional kidney is accidentally removed, and the train of symptoms which characterises the termination of a case of nephritis. The former syndrome is usually marked merely by slowly deepening coma, whilst in the latter are seen, in classical form, not only the gastro-intestinal symptoms, but also the muscular twitchings, the convulsions, and often the hyperpnœa, which form for most of us the picture of true uræmia.

I propose to describe some typical biochemical observations from a case of this latter type, and after endeavouring to demonstrate those aspects which I feel to be of true importance in the production of the peculiar nervous phenomena of uræmia, I shall describe some recent experimental work which appears to be of importance in this connexion.

A CASE OF RENAL FAILURE.

The original custom for the Goulstonian lecturer to give a demonstration on some dead body, "to be then and there dissected for the disease treated in the lectures," has for many years fallen into disuse. But I may perhaps be permitted to begin my lecture by describing a case which illustrates in many details the problems before us.

The patient, a woman then aged 42, came under my care in 1923 complaining of abdominal discomfort associated with a tumour in the right side which was rapidly increasing in size. Albumin was present in small quantities in the urine, and the blood showed marked retention of nitrogen. It was decided after consultation that an exploratory operation should be performed. This was carried out by my colleague, Mr. John Murray, and revealed extensive cystic disease of both kidneys, although the left was so much less enlarged than the right that it had not been palpable before operation. The incision was closed and nothing further was done, recovery from the operation being quite straightforward.

Course of the Disease.

At her earnest request a clear explanation of the condition and its probable consequences was made to the patient, who was a person remarkable both for her intelligence and philosophy. For two years already she had complained of constant dryness of the mouth with a peculiar taste, as well as of some diminution in her bodily strength. She was advised to abstain as much as possible from foods containing a large proportion of protein, and returned to her home. Two years later she consulted me again and was placed on a diet containing a very high proportion of carbohydrates. At this time the right kidney had increased considerably in size and the left had become readily palpable. There was considerable loss of strength, so that she was obliged to lead the life of a semi-invalid, rising for not more than six hours daily and seldom walking as much as one mile on any day. She returned home, where she lived chiefly upon green vegetables, biscuits, and farinaceous food, and gradually declined in vigour until the middle of last summer, when she again came into hospital for closer observation. I feel it my duty to record the fact that this lady was so desirous to be in any way of service to others who might be ill, that for four years she placed herself at my disposal for any investigations which I might feel to be of possible utility.

At the time of her final admission to hospital in the summer of last year, her appearance was, on the whole, healthy, although there was a slight puffiness below the eyes, and the legs, although not pitting on pressure, had a somewhat swollen appearance. She was rather deeply freckled and pigmented, which made her aspect deceptively healthy, for she was so weak that it was impossible for her to walk more than 100 yards, and dyspepsia with occasional vomiting, together with attacks of breathlessness during the night, were making her life uncomfortable. Although she could give an astonishingly clear account of her symptoms, she stated that her brain felt as if it were in a fog, and that consecutive thinking was difficult for her. She gave a graphic account of the constantly bitter taste of her saliva, and complained of a frequent sinking feeling and faintness between meals. On examination there was no obvious hypertrophy of the heart, though the blood pressure was 100 diastolic and 180 systolic. The renal tumours were very large, distending both flanks; the right remained larger than the left. Polyuria was present, but disturbed her very little, and her sight was entirely unimpaired, there being no changes whatever in the fundus oculi.

Treatment and its Effects.

My first endeavour was to alleviate her nausea and tendency to vomit, and this was accomplished by still further curtailing her diet, so that she lived for several weeks on nothing but tea without milk, orange juice, and dry biscuits, the total value of the diet being something less than 600 calories a day. On this her gastro-intestinal symptoms were indubitably less acute, but she was hungry and felt her weakness to be increased, and I was accordingly obliged to revert to the somewhat more generous diet she had previously taken. Her condition as regards nitrogenous bodies in the blood up to this time is shown in Table I.

TABLE I.

—	Dec., 1923.	March, 1925.	Oct., 1926.	June, 1927.	Sept., 1927.	Oct., 1927.
Blood-urea ..	50·6	64	68	105	90	146
Non-protein N. ..	41·9	84	52	75	96	108
Creatinine ..	1·8	2·1	2·5	3·4	4·6	6·1
Uric acid.. ..	2·9	3·6	4·8	—	3·8	2·6

(In this and subsequent tables, unless otherwise mentioned, figures represent milligrammes per 100 c.cm.)

These figures also show the upward trend of the commoner nitrogenous bodies up to the time of her final admission. The last three columns suggest that the very restricted diet had exerted some influence in reducing the concentration in the blood, but this possible improvement was abruptly lost, as shown by the high figures in the last column, when the more generous diet was resumed. Until the end of October the clinical condition was unchanged and arrangements were then made for the patient to return to her home.

The Final Phase.

In a recent essay dealing with the phenomena of uræmia, Sir John Rose Bradford has described the abrupt and dramatic violence which sometimes characterises the onset of the final uræmic symptoms. Such was my experience in the present case, for in the early morning of Nov. 2nd, 1927, the patient was seized with violent convulsions followed by unconsciousness. Within an hour she had apparently recovered and, though a little frightened, gave a clear account of her symptoms and described how the twitching of her muscles, which was now very apparent, had first been observed on the previous day, when some stiffness of the limbs and occasional aching in the back had troubled her. The blood pressure remained in the region of 150 mm. systolic, and a full half litre of urine was passed. This condition, of clear consciousness with sharp twitchings of the muscles, remained unchanged for a further 24 hours, and it is worthy of mention that her mental state was one of entire comprehension of her situation; she talked cheerfully and with full intelligence, and was at pains to call the sister of the ward and to give instructions that both my friend, Prof. E. C. Dodds, and myself were to be allowed to take any specimens of blood or cerebro-spinal fluid we might desire at any time, and that we were to have full liberty to carry out complete post-mortem examination if she should not survive.

During that night several severe fits occurred, between which the patient was only semi-conscious, and the muscular twitchings were very noticeable. She complained of extreme pain in the back, apparently due to the convulsive contraction of the erector spinæ muscle. Calcium lactate in doses

of grs. 5 and sodium bicarbonate in doses of grs. 60 were given hourly during the following day, and more than one pint of urine was passed during the same period.

Apparently as the result of this treatment, consciousness was regained, and during the next 24 hours twitching was less marked; the patient could reply to all questions, although her mental state was very confused. She drank fluids freely, and passed fair amounts of urine, although incontinence was present. Drowsiness reappeared on the night of Nov. 5th, and convulsions became frequent, with almost complete unconsciousness between the attacks. It was felt that there was no justification in proceeding to intravenous medication and, therefore, no further alkali was given during the day of Nov. 6th, when the patient lay in coma. One convulsion occurred at 6 P.M., and death followed an hour later.

The following table shows the nitrogenous constituents of the blood during this last phase.

TABLE II.

—	Nov. 2nd.	3rd.	4th.	5th.	6th.	7th (p.m.)
Blood-urea ..	257	321	356	292	367	357
Non-protein N. ..	215	241	260	220	277	272
Creatinine ..	7·5	6	6·5	6·5	7·4	9·2
Uric acid.. ..	8	7·2	7·3	9·6	14	9·6
Amino-acid N. ..	6·2	6·8	5·9	5·2	7·4	12·8

COMMENTARY.

The case which I have related is one which has been selected purposely as illustrating several important points. In the first place, it seems to me of value in that it is an example of pure and progressive renal failure terminating in uræmia, without being a case of true nephritis. Short of deliberate experiment, it is difficult to imagine circumstances by which the effects of slow destruction of kidney substance could be produced as accurately as is done by this strange disease.

It is not my purpose to enter into discussion of the pathology of cystic disease, for it is impossible yet to formulate even a plausible theory to account for this affection, but rather I would ask you to consider with me in detail the main symptoms which affected this patient, with a view to deciding to what degree we can explain the mechanism by which they were produced.

Until the last four days of her life she was really seriously troubled by two sets of symptoms only: first, those of progressive weakness; and secondly, nausea, anorexia, and especially a foul and sour taste in the mouth. It is plausible to suggest that the weakness was largely the result of the low diet on which she was obliged to live, whilst the disorders of appetite and taste were almost certainly the result of the over-saturation of the blood with urea and kindred nitrogenous substances. The account of the taste, given by the patient, was a very exact description of that of urea, and the following analysis of her saliva, compared with that of normal persons, as reported by Dodds, supports this belief very strongly.

TABLE III.—*Analysis of Nitrogenous Constituents of Saliva.*

	Ammonia (as N).	Urea.
Normal average	6·3	9
Uræmic patient	75	41

It is perhaps of particular interest that neither œdema nor hypertension was present in more than slight degree, but to these facts I shall revert later.

Returning to the events of the last five days of her life, we are faced with the classical phenomena of acute uræmia, with its two customary and interwoven symptoms—convulsions and coma. These symptoms are clearly referable to the central nervous system, and with them we must discuss the muscular twitchings which were a prominent feature of the terminal period, even at times when the brain was clear. The progressive coma typical of calculous anuria and of complete excision of the kidneys has long been distinguished from the twitchings and fits of certain other cases. Possibly the present case should be regarded as exhibiting both these types intermingled. But it is essentially the muscular twitchings and convulsion which place the present case in the category of tru uræmia, and it is my desire to see to what extent thes symptoms can be explained by observations on th changes in the body fluids which occur in suc subjects.

NITROGEN RETENTION.

Perhaps the most popular explanation of uræmi is that it is the direct result of the accumulation urea and kindred substances in the blood. Brigh himself was to some extent the originator of th theory. In his Goulstonian lectures, delivered in 183 he said: "What seems in some way to account f the general derangement and suffering of the constitu tion is the fact that urea becomes demonstrable in th circulating mass, and the blood becomes impregnate with that substance."

In the 95 years which have followed, this conceptio of the significance of urea retention has been amplifie We have learnt that urea is but one of the nitrogenou bodies which accumulates in the blood in nephriti and we have learnt that a similar retention occu in the case of certain non-nitrogenous substance Towards the beginning of the present century th study of this aspect of nephritis was given a fres impetus by the work of Widal and Javal, who intr duced more accurate methods of blood analysis, an of Achard, whose recent summary of the subject a model of clear exposition. This work appears have focused the attention of many French observe to an extent that is perhaps excessive. For thoug we all realise to-day that the retention of nitrogenou substances in the blood is an invaluable help in th diagnosis of renal failure, and though we apprecia the fact that high nitrogen figures may become great prognostic importance, we also realise th nitrogen retention by itself offers no explanation the actual phenomena of uræmia. Without enterin into the bulky literature of this subject, I venture t summarise the chief reasons against nitrogen retentio being the cause of uræmia as follows.

1. The administration of urea and kindred substances animals does not produce uræmia.
2. Conditions such as cystic disease of the kidney prostatic obstruction often persist for years with mark nitrogen retention but no evidence of uræmia.
3. Cases of uræmia without nitrogen retention a occasionally observed.

RETENTION OF NON-NITROGENOUS SUBSTANCES.

The retention of nitrogenous substances in th blood is marked in renal failure largely becau they are quantitatively amongst the more importa substances which the kidney is normally called upo to excrete; but evidence accumulates to show th other chemical substances will show increased co centration in the blood, although to a lesser degre Thus de Wesselow has published interesting observ tions on the high concentration of phosphates se in uræmic patients, and in a more recent study he h confirmed and elaborated the work of other observe which demonstrates that even sodium chloride excreted with difficulty, and tends to show increasing concentration in the blood in these case The blood analyses in the case I have described to yo were in full agreement with these findings, the actu figures in the terminal phase being as follows:—

TABLE IV.

	Blood phosphorus (normal, 2–3).	Blood chlorides (normal, about 50
Nov. 2nd	6·3	503
„ 4th	6·2	561
„ 5th	8·3	568
„ 6th	8·5	553

Andrews has recently called attention to a curio diazo-reaction given by the blood and cerebro-spin fluid in cases of uræmia; this reaction was positi also in my case. It has been shown by Blotner a Fitz to appear rapidly in dogs after nephrectomy, a though its significance is still obscure, it seems ve

possible that this again is an example of the retention and concentration in the blood of some substance which the normal kidney would excrete. Whilst admiring the patience and ingenuity with which biochemists have inquired into these problems, we are bound, I think, to admit reluctantly that at present no direct relation has been shown to exist between the accumulation of any of the chemical bodies I have discussed and the nervous phenomena of uræmia.

Acidosis in Uræmia.

If now we turn our attention to other aspects of the blood chemistry in renal failure, we find that acidosis is almost invariably an accompaniment of this state. I use the word acidosis in accordance with the suggestion of the Medical Research Council to denote a lowering of the alkali reserve of the blood.

The work of Palmer and Henderson, of Weil and Guillannin, of Mogena and Orcoyen, may be quoted as typical observations amongst many which confirm the view that acidosis can be demonstrated in all cases of uræmia in which nitrogen retention is present and especially in those with marked nervous and respiratory symptoms. My patient with cystic disease of the kidneys was no exception to this rule, for the alkaline reserve estimated shortly after the onset of her terminal symptoms stood at the low figure of 12·6, and subsequent estimations are shown in the following table:—

Table V.—*Alkali Reserve in c.cm. of CO_2 per 100 c.cm. Plasma.*

Nov. 2nd	12·6	Nov. 5th, 10 A.M.	48·5
„ 3rd	13·7	„ 5 P.M.	55
Nov. 4th, 5 A.M.	20·9	Nov. 6th, noon	56
„ 10 A.M.	28·7	„ 7th (autopsy)	18·2
„ 9 P.M.	36·8		

The gradual increase in the alkali reserve which occurred in later days was the result of the administration of large doses of sodium bicarbonate which was instituted about 12 hours after the first convulsion. The effect on the patient's general condition was very marked at first, but passed off after the third day. Muscular twitchings never completely disappeared, although they became less noticeable, the general effect being a restoration to full consciousness. We must, however, observe that this amelioration was only temporary, that the muscular twitchings were never entirely suppressed, and that in spite of the improvement in the acidosis, coma and convulsions returned and became irremediable. The logical conclusion is that the condition of the blood alkali is not by itself a cause of the neuromuscular phenomena, and the absence of such symptoms in other conditions of acidosis makes it probable that here once more we have been following a false trail.

Possible Importance of Calcium.

If we resume our search for a chemical explanation of uræmia, having discarded those substances which are in excess in the blood and having put aside acidosis as an explanation, is there any other feature of the blood chemistry which may possibly throw light on the problem? Blood analysis is usually confined to a limited group of substances, but there is one amongst them which we have not yet examined, and which may have an important bearing on uræmia. I refer to calcium. We are here on very difficult ground, for though actual estimation of the calcium content of blood is not unduly difficult the problems surrounding the actual physical state of calcium in the blood, the relation, for example, between the ionised and total calcium, are extremely intricate, so that an interpretation of the figures is at present very nearly impossible. In the work of de Wesselow, which I have already quoted, attention was drawn to the diminution in the calcium content of the blood which accompanied the increase in the phosphates. Such a diminution was very marked in my case of cystic disease, the calcium of the blood, which is normally from 10–12 mg. per 100 c.cm., being reduced to 6 mg. or even less. This low figure was found to persist throughout the terminal phase of the patient's illness, and was not apparently influenced by the improvement in the acidosis which followed the administration of sodium bicarbonate. The actual calcium figures are shown in the following table:—

Table VI.—*Calcium Content of Blood.*

Normal average .. .. 10–12.

Uræmic patient	Nov. 2nd	6·6	Nov. 6th	5·9
	„ 4th	6·5	Post-mortem	8·9
	„ 5th	6·5		

I have already said that in the present stage of our knowledge it is impossible to draw any permanent conclusion as to the meaning of these low calcium figures in uræmia, but I think that reflection on the phenomena observed in certain other clinical states in which the calcium of the blood is reduced is somewhat suggestive.

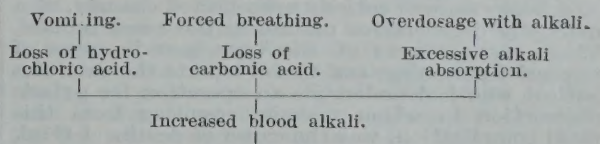
Tetany.

The group of cases in which a distinct reduction of the blood calcium is most marked is surely that in which are to be seen the symptoms described as tetany, and tetany is found to occur in a large number of apparently dissimilar diseases, the chief of which are: (*a*) non-malignant pyloric stenosis; (*b*) parathyroid deficiency; (*c*) chronic diarrhœal states; (*d*) rickets; (*e*) poisoning by overdosage with alkalis.

I recall, for example, an interesting patient with pronounced vomiting as the result of pyloric obstruction of obscure origin. She suffered from tabes, and was at first believed to have gastric crises; but fuller investigation showed that practically nothing could ever pass through the pylorus. The barium meal upset her greatly, and after several hours, during which she was in a semi-fainting condition, she exhibited muscular irritability, and I was called to her at a time when she lay in a condition of complete carpopedal spasm with the classical flexion and extension of joints characteristic of severe tetany. A subsequent operation revealed a curious thickening at the obstructed pylorus which was possibly of gummatous origin.

Amongst other causes of tetany we must note that it has been produced experimentally in man by forced breathing over long periods, and in certain cases where the therapeutic administration of alkalis has been pushed to an extreme point. In such examples it is easy to demonstrate certain chemical factors which are constantly present and which I have endeavoured to indicate in the accompanying table.

Table VII.



Calcium reduction and tetany.

It will be seen from examination of this table that all the cases in this group have three factors in common: first, alkalosis; secondly, tetany; and thirdly, a reduction in the calcium content of the blood.

Reverting to the conditions in which tetany is commonly encountered it is, of course, established that some connexion often exists between this condition and a deficiency of the parathyroid glands; its occurrence in certain diseases of children, such as rickets and cœliac disease, is also well known; whilst even in adults it is an occasional finding in conditions of chronic diarrhœa. Dr. Jean-Charles Roux recently showed me a very interesting case at the Hôpital Vaugirard in Paris. The patient was a woman who for many years had had constant diarrhœa, with loose stools containing a large proportion of all the ingested fat. The pathology of the case was obscure. For many months she had suffered from tetany, often latent, but sometimes showing itself acutely; its

main manifestations were always rapidly relieved by any one of the following agents: (*a*) cod-liver oil emulsion; (*b*) irradiation with ultra-violet light; (*c*) calcium and parathyroid medication.

There is, I think, a common action to each of these three forms of treatment, and this action may be briefly defined as fixation of calcium. Such a view is supported by the current conception that calcium shortage is the one common factor in all forms of tetany, and it is worth considering whether it is not possible that a true relationship may exist between the twitchings and convulsions of uræmia—which, as we have seen, are associated with a low calcium content of the blood—and the nervous phenomena known as tetany, in which calcium shortage appears to be the outstanding chemical feature. I have indicated that acidosis is usually prominent in uræmia, and we have gone on to note that alkalosis is often very marked in tetany, but that a disorder of calcium metabolism seems to be common to the two states, and that there is (as I think) a close resemblance between the neuro-muscular phenomena seen in the two syndromes, has not always been recognised.

Renal Disease of Gastric Origin.

Having drawn attention to this suggestive similarity, I will now consider for a moment whether there may not occasionally be an even closer association between gastric and renal disease than has usually been recognised. In Table VIII. I have set out some of the

Table VIII.

Progressive Renal Disease.	*Non-malignant Pyloric Obstruction.*
Acid accumulation in blood.	Acid loss from vomiting.
Acidosis.	Alkalosis.
Phosphorus retention.	Chloride loss.
Nitrogen retention.	Nitrogen retention.
Calcium reduction.	Calcium reduction.
Twitchings and convulsions.	Tetany.

outstanding features in: (*a*) cases of advanced renal destruction, and (*b*) cases of pyloric obstruction with tetany. I have already referred to an example from the latter group, and I am indebted to Dr. Hinds Howell for the information that later, whilst under his care in St. Bartholomew's Hospital, before an operation for the relief of her pyloric obstruction, this patient exhibited persistent albuminuria with hyaline and granular casts. Brown, Hartman, Eusterman and Rowntree, and Zeman, Friedman and Mann have reported a series of cases of pyloric or upper intestinal obstruction, usually accompanied by tetany, in which routine histological examination of kidneys removed at autopsy showed entirely unsuspected changes, of a markedly degenerative nature, in the renal tubules. These changes were of the type seen in cases of mercurial poisoning, and Crohn reports the case of a patient who had undergone an operation for pyloric obstruction in whom uræmia, resulting from this renal complication, was the cause of death. I think that this rare group of cases is a very instructive one in reminding us that not only will renal damage produce profound changes in the blood chemistry, but that chemical changes in the blood may themselves exert a destructive effect upon the kidney substance.

Some Experimental Work.

It will perhaps be valuable if we now turn our attention from these purely clinical and biochemical observations to some recent experimental work which seems to me of great importance in connexion with the problems of uræmia. Of particular interest are certain experiments which have been performed in connexion with the rapid ingestion of large quantities of water in animals. In normal circumstances we are protected against a too rapid absorption of water by a series of physiological mechanisms. In the first place, thirst is quickly replaced by satiety, and even if these natural instincts are forcibly overcome the pylorus will by complete closure prevent the entrance of water into the small intestine after a certain amount had been let through. Overloading of the stomach with water is soon followed by vomiting and thus any excess in the small intestine is prevented. It would seem that there is little limit to the speed with which the small intestine can absorb water, but the renal mechanism by which it is removed from the circulation is also a rapidly acting one, and, therefore, provided that the pyloric valve exerts some degree of control it is impossible in ordinary circumstances to produce a true plethora of water in the circulation.

Rowntree and others have, however, by passing tubes through the pylorus in animals, succeeded in introducing water so rapidly into the small intestine that it was absorbed into the blood stream quicker than the animal's kidneys could remove the consequent surplus. A very interesting series of events then occurred, the animals under investigation exhibiting twitchings and strychnine-like convulsions which rapidly passed on to coma and death. It is difficult when reading the accounts of these experiments to find any distinction between the symptoms of such animals and those of patients suffering from renal failure. No one, so far as I know, has dared attempt the reproduction of these experiments on men, but it is worthy of note that in diabetes insipidus a sudden arrest of the polyuria produced by means of the administration of pituitary extract has in some instances been followed by the appearance of giddiness, twitching, and fainting, symptoms which never occur in these circumstances if the intake of water is reduced before the injection of pituitary extract.

The most recent experimental work dealing with uræmia is perhaps less convincing because of its complexity, but close examination shows that it is probably of extreme importance. Working with dogs E. Andrews has shown that when the alkali reserve of the blood is low the injection of salt solution into the circulation fails to produce diuresis. After a short period muscular twitchings appear and from this the animals pass on to a condition in which repeated convulsions terminate in coma, hyperpnœa and death. Examination of the blood of these animals showed definite nitrogen retention, post mortem examination of the animals' brains demonstrated œdema, but the kidneys on microscopic section were found practically normal.

Neglecting for the moment the observations of Andrews on other aspects, it would seem that by these experiments a syndrome indistinguishable from that of uræmia is produced by the injection of sodium chloride solution in the presence of acidosis, without any renal lesion being present before or after. And it is worthy of interest that this worker reaches the conclusion that it is largely owing to the disturbance of calcium metabolism that the convulsive symptoms are produced. In an incomplete, but suggestive series of experiments he has been able to suppress the convulsions of these animals by the intravenous administration of calcium in large doses.

Conclusion.

I have now touched on many of the chemical factors which, at the present stage of our knowledge, appear to be of major importance in the problem of uræmia. That my review must be extremely incomplete I am well aware. And particularly I am conscious of two very important omissions: first, I have made no reference to the relative conditions of the blood and of the cerebro-spinal fluid; and secondly, I have not endeavoured to deal with cerebral œdema as a possible factor in the production of uræmia.

As regards the cerebro-spinal fluid, it is obvious that by studying its chemical state we have better knowledge of the chemical conditions in the central nervous system than if we study the blood alone, but the difficulty of collection is a great handicap in such investigations, and has prevented that frequent repetition of observations which is so easy in the case of the blood. The analyses which were secured on the cerebro-spinal fluid in the case of my patient with cystic disease gave figures similar to those in the blood, as far as we could ascertain, but usually less

marked in degree, there being probably some lag in the appearance of concentrated retention products in the central nervous system; but the impossibility of taking many specimens makes me hesitate to speak more precisely than this. To cerebral œdema I shall refer in a later lecture; for it seems appropriate to discuss this question when dealing with the general problem of œdema.

In the study of medicine we should, said Bright, cultivate a chastened power of generalising our ideas. And if my dissection has dealt with chemical as much as with anatomical peculiarities it is because I feel that it is in that direction that we can most fruitfully pursue our inquiries into the problem of uræmia. Ninety-five years ago, when delivering these very lectures, Bright again and again dwelt on the importance of the chemical aspects of these problems. "If the deranged action of the kidneys," he said, "continue long, the urea can be detected by the chemist's art in the course of the circulation," and in later passages he gave full credit to his friend, Mr. Rees, who was "ardently pursuing the subject of animal chemistry." To-day we are no less dependent on the help of our friends in the laboratories, and I feel it proper to conclude this lecture by expressing my indebtedness to that group of colleagues from whom I have always received such unselfish assistance in the exploration of these difficult problems.

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ON THE STATISTICAL EPIDEMIOLOGY OF RESPIRATORY DISEASES.

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DEATHS from diseases of the respiratory system form the second largest group of causes of death in this country. The two main headings in this group are bronchitis and pneumonia. This paper considers how these two diseases have varied in time and in place and some of the factors influencing the mortality.

The history of pneumonia dates back to very early times, but the accounts given by some of the ancient writers are not sufficiently clear for identification of the clinical or pathological variety. In his record of diseases at Thasos, Hippocrates[1] found that epidemics of the pulmonary and catarrhal diseases were commoner in the spring of his First Constitution. Pneumonia was often confounded with pleurisy by the old Greek physicians; to Galen, 500 years after Hippocrates, belongs the credit of differentiating them. In the seventeenth century Sydenham gave the first clinical description of broncho-pneumonia,[2] and Morgagni identified the clinical features of pneumonia with solidification of the lungs. At the beginning of the nineteenth century the Bohemian, Carl Rokitansky, defined lobar and lobular pneumonia. According to Ewart[3] the affections of the bronchial system had no separate history before the beginning of the nineteenth century, when Badham, in 1810, introduced the name bronchitis and Laënnec gave his masterly description of bronchitis and pneumonia. But, as we shall see later, the distinction between these two diseases was by no means accurate until quite recent times.

Epidemics of Pneumonia.

The disease has been described in epidemic form from the Middle Ages onwards, and in the opinion of authorities such as Allbutt and Rolleston, the type of disease recorded in these epidemics was more like pneumonia than any other disease. In their "History of Pneumonia" Sturges and Coupland[4] concluded:—

> "We can say no more than that these ancient epidemics resembled generally certain prevalent fevers of later date, in which symptoms of lung mischief occupy a prominent place and death discloses engorgement or consolidation of those organs. The earlier part of the sixteenth century was remarkable for a series of epidemics apt, under certain conditions, to assume this character."

A summary of Hirsch's[5] detailed account of the epidemics of pneumonia in Europe is given below.

The first information on the epidemic prevalence of inflammation of the lungs was in the sixteenth century. Epidemics were recorded in Italy, Germany, the Netherlands, Switzerland, and France, but Italy appears to have been the centre of the epidemics; in fact pneumonia has always been very prevalent in Italy right up to modern times. In the winter and spring of 1601–02 a very severe epidemic of malignant pneumonia prevailed in Italy, and during the seventeenth century outbreaks were recorded in 1610, 1612, 1633, 1696, and 1698. In 1624 there was a severe outbreak in Germany, chiefly affecting children. In Switzerland epidemics were observed in 1652, 1685, and 1695. Opinions were divided as to the contagiousness of the disease; the question of transmissibility in epidemics of pneumonia was raised and debated by many Italian writers in the seventeenth century, but they were unable to come to a decision.

There is ample evidence of epidemics of pneumonia in the eighteenth century, particularly in Italy, Switzerland, and France. The earliest accounts of severe epidemics of pneumonia in the United States and Canada date from the eighteenth century, and the earliest records of malignant epidemics of inflammation of the lungs in England, Spain, and Denmark belong to this period. In France pneumonia was prevalent in pandemic form during the latter half of the century and nearly all the epidemics occurred in the winter and spring. In Spain pneumonia was first described in 1734 and it was widely diffused during the autumn and winter of 1735–36 and 1736–38. In Italy and Switzerland it appears to have been prevalent at intervals throughout the century. For Great Britain we have accounts of the epidemic prevalence of severe forms of pneumonia in Fife in the winter of 1736 and Huxham's account of the outbreaks at Plymouth in the winter and spring of 1733, 1740, and 1746. Of the pneumonia epidemic in 1733 Huxham[6] said that in March "in the beginning of the month the catarrhal fever was everywhere vastly epidemic, which still continues, and now also Squinzies, Pleurisies and Peripneumonies, both of the true and bastard kind are frequent." In April he noted: "the epidemic fever is still up and down the country and many are now in a consumptive way from the ill-effects of it and an unfavourable crisis: Many are seized with Pleurisies and Peripneumonies." In the records of nearly all the epidemics in Europe during the eighteenth century attention is drawn to the malignant type of the disease and its so-called typhoid symptom.

Early in the nineteenth century rather more definite views were held about the term "pneumonia" after Laënnec had given a clear definition of the two diseases bronchitis and pneumonia. Our records of deaths from these two causes in England and Wales show that there was much interchange of certification between pneumonia and bronchitis, and we cannot study the statistics of the two diseases separately—at any rate not for the nineteenth century. Stevenson[7]

showed this quite definitely in his analysis in the decennial supplement 1901–10. He considered that—

"Comparison of the mortality returns from the two causes at different times leaves no doubt that the bronchitis of to-day may be the pneumonia of to-morrow, and vice versa, though the main change in the period covered by Table 10 (1861–1910) has been one from bronchitis to pneumonia."

He examined the death-rates for different periods of life from 1901–10 back to 1861–70, and, broadly speaking, he found that the changes which have occurred in the recorded mortality from pneumonia and bronchitis are largely attributable to transfer between the two diseases, partly because of the fact that the extreme reduction of bronchitis mortality is so nicely balanced at each age by just the rise in pneumonia mortality required to reduce the decline from the two causes to moderate dimensions. There is just one exception, and that is at ages 15–25 in the case of males, where the rise in pneumonia mortality is unbalanced by a fall in bronchitis mortality. Two epidemics of pneumonia in the nineteenth century were the subject of special reports to the Local Government Board. One was reported by Ballard [8] at Middlesbrough in 1888, when 1633 persons were attacked in a population of 97,000 and there were 369 deaths. The second report by Parsons [9] was on the epidemic at Scotter in Lincolnshire in 1890.

The standardised rate of mortality from bronchitis and pneumonia from 1861–1911, given in decennial periods in the Registrar-General's decennial abstracts, shows that the combined mortality from these two diseases for males increased rapidly between 1861 and 1880, then more slowly to a maximum in 1881–90, followed by a decline in 1891–1900 and a big drop in 1901–10.

Standardised Death-rates per Million Living.

Year.	Males.	Females.
1861–70	2923	2436
1871–80	3415	2815
1881–90	3433	2778
1891–1900	3342	2693
1901–10	2679	2142

The maximum mortality for females was reached in 1871–80. It should be noted that the rules of certification of the deaths discussed here only include those in which pneumonia or bronchitis was alone recorded on the certificate or associated with another cause of which they take precedence under the rules of tabulation. Under the revised rules of 1901 pneumonia was given priority over local diseases, and this doubtless increased the number of deaths tabulated under pneumonia. Under the present rules certificates returning measles and broncho-pneumonia would be tabulated under measles and those recording influenza and pneumonia under influenza.

Climatic Conditions and Pneumonia.

The increase in mortality from bronchitis and pneumonia during the middle of the nineteenth century was frequently commented on by Farr. He thought that much of it was due to the dust and smoke of cities, and in 1869 he asked whether factories and kitchens could not largely consume their own smoke—a question which has been frequently asked since. He also spoke of the risk from atmospheric temperature and compared the annual deaths from respiratory diseases by month in London with degrees of temperature. He concluded that the fatality from these diseases was directly influenced by cold weather. The question of the relation between unfavourable climatic conditions and the death-rate from respiratory diseases is discussed and various conjectures are made in almost every report on pneumonia and bronchitis. The seasonal curve of mortality is well known. Fig. 1, which is copied from the Registrar-General's annual report for 1925, shows the mean annual death-rate from respiratory diseases for 1921–25 plotted against the mean monthly temperature for these years. In order to compare the two curves the temperature scale has been inverted. The curves are very similar: the winter rise in mortality from respiratory diseases corresponds to the fall in temperature, and with the rise in temperature in the spring there is a decline in the respiratory death-rate. But the month of maximum mortality is not in the depth of winter, the coldest months of the year, but in February, the time of greater variation. Probably the most valuable recent work on the subject of climatic conditions and mortality is that of Huntingdon,[10] who thinks that a variable climate is that most productive of health and efficiency; he has collected data to prove that the ideal climate is that enjoyed by the inhabitants of England and Wales. One wonders whether he would consider the climate we have experienced during 1927 as an ideal one. Perhaps we are really no worse off now than 200 years ago; for example, this is Huxham's [6] monthly report of the weather in 1734.

June.—An easterly wind blew almost daily from the 6th to the 20th.

July.—Fair but cold at beginning of month, middle of month south-west wind with rain, then north wind returned. Later an immense quantity of rain fell.

August.—Fair at beginning, but about middle of August very much rain and too much also at the end of it.

This would not be a bad account of the weather for the same months of 1927.

Temperature and the Pneumonia Mortality-rate.

We will consider first the quantitative relation between temperature changes and the mortality-rate from pneumonia. The Medical Statistical Staff of the Ministry of Health investigated this point in some detail and tried to estimate how many deaths might be expected on the average with changes of temperature. Most of the work was done for the report on Influenza of the Ministry of Health, and those who are interested in the relation of weather and epidemic disease should read Chapter VII. of the report. The doctrines of Hippocrates, Galen, Sydenham, and others are set out and some of their arguments are discussed.

The data used were confined to the registration districts of London and to the periods 1850–89 inclusive, because no records could be found of air temperature for any other large town in England for many years. The period was limited to 1850–89 because there were no influenza epidemics during this period; since 1890 there have been several epidemics, which would have affected the pneumonia death-rate. The death-rate from all forms of pneumonia in each of the first 12 weeks of the year was computed for the 40 years and correlated with the mean temperature of the air in the preceding week—i.e., a correlation table was formed from the 480 pairs of observations and 2° was taken as the unit of grouping for temperature and 4 per million for the death-rates. The correlation was quite significant—$-\cdot371 \pm \cdot026$. From the regression equation it was calculated that a drop of 1° Fahrenheit in the temperature corresponded to a rise in the pneumonia death-rate of the next week of about 6 per 10 million living. The calculation was repeated for the last 12 weeks of each year from 1850–89 and also for the years 1903–14 (135 observations). The correlation between pneumonia and temperature for the fourth quarter of the years 1850–89 was $-\cdot458 \pm \cdot024$. Now we come to the interesting result that in the recent period, 1903–14 the correlation between the pneumonia death-rate and the temperature of the previous week was much higher than in the pre-influenzal period 1850–89. This time the correlation was $-\cdot707 \pm \cdot029$. Regression lines were fitted to the data and the slope of the line for the last period was much steeper than for the earlier period—a greater difference than could be expected from chance fluctuation.

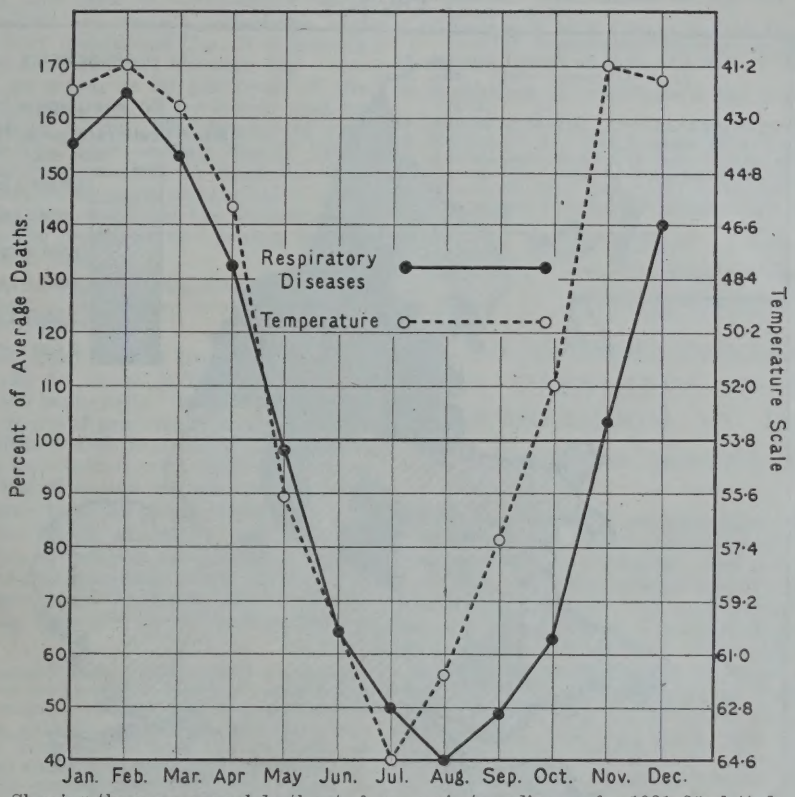
The absolute magnitude of variations of death-rate with temperature is not large and the irregularity of the trend is considerable, but it looks as though the pneumonia of recent years has varied more closely with temperature changes than in the earlier periods. No correction was made for trend in this first analysis. For the next stage of the inquiry deaths from bronchitis and pneumonia were combined and allowance was made for seasonal variation, by referring every death-rate and every temperature in each week of the 52 weeks of the years to the mean rate of mortality and the mean temperature of the week of the year to which it belonged—that is, deviations of mortality from their

norms were correlated with deviations of temperature from their norms.

For example, suppose that for the 40 years of the series the mean death-rate from the respiratory diseases in the third week of the year was 109 per million, and the death-rate in one particular third week was 93 per million, the difference between 93 and 109 is −16, then −16 was entered in the correlation table against the corresponding difference between the temperature and its mean for the same week for the 40 years. Following this method throughout for all the weeks of the 40 years one had 2087 observations. Now one proceeded to try to answer the following questions: What is the relation between temperature of the week and the respiratory death-rate for the same week, temperature of one week and the respiratory death-rate of the next week or the week a fortnight later? These were the correlations: temperature and death-rate of the same week −·231±·014; temperature and death-rate of the next week −·477±·011; and temperature with death-rate of fortnight later −·405±·012.

The closest relation is therefore between the death-rate and the temperature of the previous week. The regression equations showed that a drop of one degree of air temperature below the mean temperature of the week was associated on the average with an increase of 2·5 deaths per million living above the normal average of the following week's mortality. But the relation was not sufficiently stringent to be of any real value in prediction. The conclusions from these investigations were that if the temperature falls below the normal of the season of the year, on the average, the arithmetical increase of mortality will be 2·5 per million living, but so many other known and unknown factors are involved in any particular week that the actual result may depart considerably from its average value.

FIG. 1.



Showing the mean annual death-rate from respiratory diseases for 1921–25 plotted against the mean monthly temperature for these years. Copied from the Registrar-General's annual report for 1925.

Fog and Respiratory Mortality.

Fog has been frequently spoken of as an important factor in respiratory mortality. Leonard Hill has emphasised the evil influence of smoke and fog upon health, partly because of the obstruction of sunlight. In 1925 the medical officer of health for Glasgow [11] attributed the increase in the respiratory death-rate during November to the fog which prevailed during the month, and which became dense during the four days Nov. 18th–21st. He reported that—

"During the four weeks ending Nov. 28th, 1468 deaths were registered as compared with 1224 for the same period last year. This increase referred almost entirely to the last two weeks of the month—i.e., during the fog week and that following—when the death-rates became 18·7 and 21·0 respectively, against 15·6 and 16·6 for the same weeks of last year. The number of deaths of children under 5 years of age was practically unaffected, the increase in the mortality over last year being largely confined to those over 60 years of age. The fog thus affected principally older people. It will also be noted that the mean temperature before and during the period of fog was low—35·8°, 36·3°, and 36·1° for the three weeks ending Nov. 28th."

He goes on to say that this appears to indicate that when fog is associated with low temperature the respiratory death-rate among older people is influenced very considerably, although its effect is not evident in the case of children. But if we try to obtain a precise numerical evaluation of the bad effects of smoke and dust, there are very serious difficulties. We cannot definitely show that a rise in mortality is the direct action of fog, any more than we can demonstrate the absolute influence of temperature on the death-rate. Russell's [12] investigations are the only ones in which an attempt has been made to put the relation of fog on a quantitative basis. He shows that the numerical measure of fogginess is by no means a satisfactory one. He examined the influence of fog and temperature on the weekly mortality from respiratory diseases among children and adults during the winter months in two metropolitan boroughs—Islington and St. Pancras—over a period of 21 years. His conclusions were that fog itself has no appreciable effect on the death-rate, but if fog is associated with a low temperature and frost the respiratory death-rate of adults can be influenced very considerably, but there is not much effect on the mortality of young children. He gives, as illustrations, the experience of the two London boroughs between October and March in 1883–84 and 1892–93. In both periods there were considerable outbursts of fog in November and December, the fog records of the two periods being not dissimilar. But in 1883 there was no obvious increase of mortality after the fogs. In 1892 there was a large increase, and in that year the fog was associated with a sharp fall of temperature not occurring in 1884. His conclusions to his second report sum up very clearly the relative importance of fog and temperature:—

"It is essential to bear in mind that, in any study of the influence of weather on the prevalence of disease, the assignment of the increased mortality to any particular factor is not nearly so simple as is generally believed. The fact, often overlooked, is that there are a multiplicity of causes, both atmospheric and meteorological, all of which are highly inter-related, and it is the cumulative effect of these, and not the influence of an individual factor, that finds expression in an increased death-rate from respiratory disease."

The same point is strongly emphasised by Sir George Newman [13] in the following sentence :—

"The true inference is, I believe, that in the matter of atmospheric pollution, as in that of meteorological factors, the inter-related variables in any given case are so numerous that only by means of a far longer series of observations than our data provide can any valuable statistical conclusions be reached."

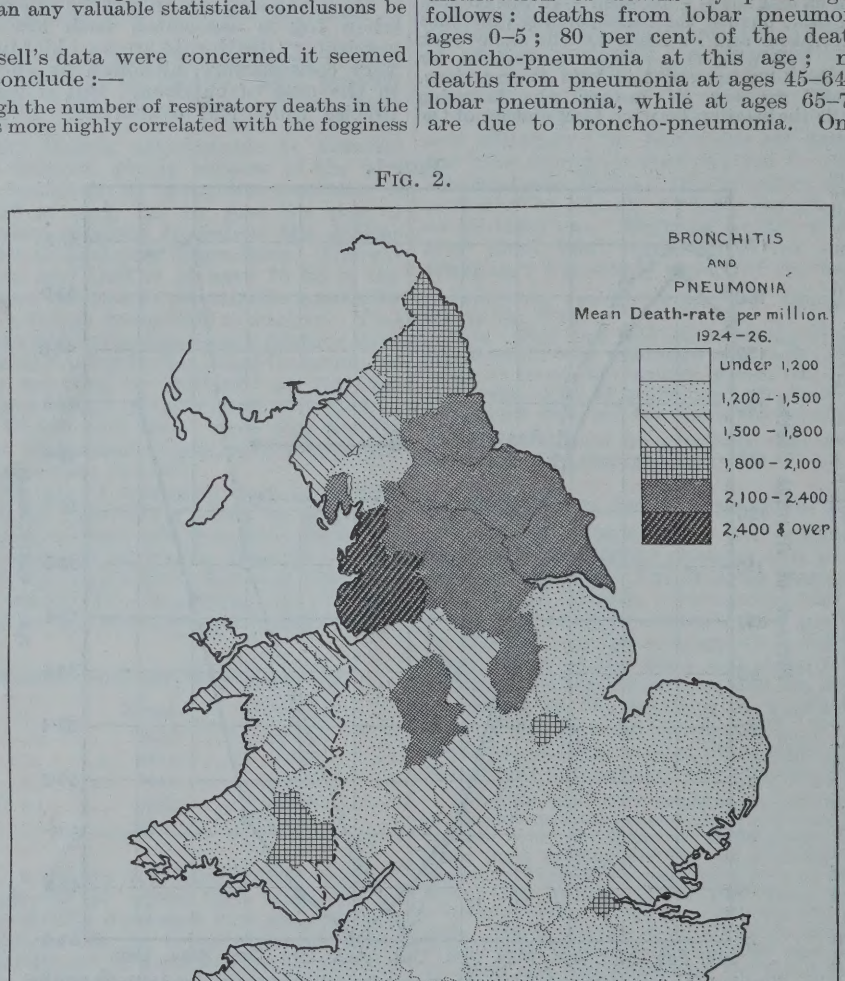
So far as Russell's data were concerned it seemed warrantable to conclude :—

"1. That although the number of respiratory deaths in the following week was more highly correlated with the fogginess than with the temperature of the previous week over certain periods, yet, on the average, a low temperature exercised the greater influence.

"2. That knowing the temperature and the amount of fog, it is possible to predict the mortality of the succeeding week, but only within a marginal error of roughly 30 per cent."

Thus in atmospheric pollution as in meteorological factors the number of inter-related variables are so numerous that we cannot measure the influence of any one factor with any certainty, but as Sir George Newman [13] pointed out, all the statistical evidence points to sharp changes of temperature, particularly in their effect upon the aged, as the real basis of the evil reputation of climate in relation to respiratory disease.

FIG. 2.



Map showing the relative distribution of mortality from bronchitis and pneumonia, 1924–26.

The Age Factor.

It is very important to study the influence of external factors on the mortality from respiratory diseases at different age-periods, as Russell has done. From various investigations that have been made it is quite clear that such factors as social and climatic conditions as far as we can measure them do vary considerably in their fatal effect on mortality at different ages. Young [14] found that meteorological factors had very little influence on the mortality of children under 5. The present writer [15] made a similar analysis and found a definite association between temperature and mortality at ages 40–60 and 60–80, that the lower the temperature the greater the mortality from pneumonia at these ages. I found also that environmental conditions were an important factor of the mortality among children under 5, whereas these factors were of much less importance in middle life and of little or no importance in later life.

A feature of pneumonia and bronchitis is that they are extremely fatal at both extremes of life. The distribution of deaths by pathological type is as follows: deaths from lobar pneumonia are rare at ages 0–5; 80 per cent. of the deaths are due to broncho-pneumonia at this age; nearly half the deaths from pneumonia at ages 45–64 are ascribed to lobar pneumonia, while at ages 65–74 more deaths are due to broncho-pneumonia. One of the most interesting epidemiological features of the mortality from respiratory diseases in England and Wales is the variation of the mortality in the different areas. In 1926 the rate of mortality from pneumonia varied from 486 per million in the rural districts of the south to 1169 in the county boroughs of the north. In 1913 Stevenson commented on the striking differences in the mortality in the following terms :—

"Apart from London, where it is fairly high, the mortality steadily decreases from north to south in all classes of area and in both sexes, the position of Wales being generally intermediate between the North and the Midlands. The range of mortality is extreme, being almost four times as great for males in the county boroughs of the north as for females in the rural districts of the south and three times as great when males alone are compared. Even when comparison is restricted to the same class of area in each case the mortality of the north is in no instance very much less than twice that of the south. No doubt this depends to some extent upon industrial conditions, but these can scarcely explain the great difference between the North and the Midlands. Evidently pneumonia is to a large extent a preventable disease, and the north of England has still much to learn with regard to its prevention. It is a striking fact that all these statements as to relative mortality copied verbatim from the Report for 1912 apply equally to the year 1913."

The mortality from bronchitis and pneumonia in 1926, as compared with that in 1913, was much lower, but the remarks as to the relative distribution in the country are still valid (see map, Fig. 2). The statistics of notifications of pneumonia also point to the unsatisfactory position in the north, particularly

ıe north-west of the country—in Lancashire and ıeshire. The excessive mortality from pneumonia in ıe north of England might be attributed to the ırsher climate, but the great variation between the ortality in separate districts of the north makes evident that climate is not the whole explanation. reenwood [16] showed that, although economically ıe working-class families of Bolton and Warrington ere better off than the Reading families, the rate of ortality from all causes was far higher in Bolton ıd Warrington than in Reading. The chief dis-epancy in the adult mortality was with respect to ıeumonia. Industrial conditions in the north are obably the explanation, because of the evil effect dust and smoke and lack of ultra-violet rays. ıncashire and Cheshire are mainly industrial, and ith the present factory conditions the air is heavily olluted with smoke and dust all through the year. ill estimated that as much as 50 per cent. of the ınlight in Manchester was cut off by smoke and no ss than 40 per cent. in Leeds. The deposit of soot Manchester [17] for the year ending March, 1922, as 480 tons and as much as 697 in Rochdale; in alvern there was only 69 tons during the same year. obably the best known work on the influence of ısty occupation on the health of the worker is that Collis, who considers that—

"Dust which impairs the vitality of the lungs predisposes tuberculous infection . . . and at the same time predis-ses to other respiratory diseases."

He has shown that dust formed from the husk of getable fibres tends to cause a typical form of thma associated with bronchitis. Bronchitis follows on inhalation in excess of practically every form of ıst which is insoluble and non-colloidal. Pneu-onia, although its association with dust inhalation not as marked as that of bronchitis, may result from halation of the same dusts as cause bronchitis.

It would take too much space to go into the tails of the various investigations Collis has made, ıt these are some of his general conclusions given in report [18]: "The General and Occupational Prevalence Bronchitis and its Relation to other Respiratory iseases":—

For coal miners generally the bronchitis and pneumonia tes are high, with the exception of Northumberland and arham, while men working on the coal face experience gher mortalities from phthisis, pneumonia, and bronchtis an do other miners. Exposure to heat and fumes seems have a definitely bad effect with regard to bronchitis and similar, although less pronounced effect with regard to ıeumonia. Bronchitis and pneumonia are high among tton operatives and rope makers and especially high among tton strippers. Woollen workers, carpet makers, millers, ıd carpenters, on the other hand, show no excess of either onchtis or pneumonia. Occupations in which there is posure to silica dust, such as potters, cutters, sandstone, ıd tin miners, all show a high mortality from respiratory seases. All these results are based on the rates of ortality for males at working ages 25–64 and therefore do ot include the old-age mortality.

Since cotton manufacture is a great north-western dustry, the high rates of mortality from bronchitis ıd pneumonia in that area suggest that the workshop nditions are to a large extent responsible. The fact ıe cannot get away from in studying respiratory seases is that so much of the mortality is preventable, ıd the industrial towns of the north have still very uch to learn with regard to its prevention.

No one will dispute that skilful nursing is the sential treatment. In London during 1920 only 8 per cent. of 5315 deaths from pneumonia occurred hospital and nursing homes, and 22 per cent. in oor-law institutions. As many as 60 per cent. of ıe deaths occurred outside these institutions—in her words, at home. In a recent report by the inistry of Health on Scarlet Fever and in the annual port of the Chief Medical Officer for 1923 it was ated that—

"The time has come when the whole question of using olation hospitals to greater advantage calls for the con-deration of local authorities, and it may well be that fuller regard should be paid to patients suffering from respiratory diseases."

If greater provision were available in hospitals for the treatment of respiratory diseases much of the mortality might be reduced.

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AN IMPROVED TECHNIQUE FOR THE TREATMENT OF INTERNAL HÆMORRHOIDS BY INJECTION.

BY ARTHUR S. MORLEY, F.R.C.S. ENG.

THE treatment of internal hæmorrhoids by means of injection has been making steady strides since the attention of the profession was forcibly attracted to it in 1914. It is becoming known to an ever-increasing number of medical men and to the lay public. In the first paper which I published on the subject [1] in 1916, and in my book on Hæmorrhoids,[2] I described a method of treatment by injection of a 20 per cent. solution of phenol in equal parts of glycerine and water, in this respect following the practice of most of those who had previously practised treatment by injection. This solution was injected into the centre of the pile-mass. Some other surgeons, and notably Dr. Dudley Wright, used a 10 per cent. solution of carbolic in the same way.

Since 1914 I have treated not less than 5000 cases of hæmorrhoids in this way, and the results have been extremely satisfactory on the whole, both to the patients and to myself. I am still in touch with a good many patients whom I treated in 1914 and 1915, and I hear of a great many more through friends whom they recommend to consult me.

My peace of mind has been disturbed from time to time, however, by certain complications which have occurred. The chief of these was severe pain, coming on some 48 hours after an injection, and usually due to sloughing of part of the pile-mass. This sloughing occurred only in about 1 in every 200 cases, but it led to really intense pain, which frequently lasted for more than a week. In other cases—some attended with this sort of pain and some without it—rather alarming secondary hæmorrhage took place. This complication occurred, according to calculations from statistics of my own cases, in about 0·25 per cent. of cases. It was due to slight sloughing opening up a blood-vessel of appreciable size. I have never met with a fatal case of hæmorrhage after injection, but in several cases the bleeding was sufficiently severe to be very alarming and to leave the patients debilitated. As a great many of my patients come to me from all

[1] THE LANCET, 1916, i., 617.

[2] Hæmorrhoids, their Ætiology, Prophylaxis and Treatment by Means of Injections. London: Henry Frowde, Hodder and Stoughton.

parts of the country and are out of reach in case of the necessity for prompt attention, the possibility of these complications, even in so small a proportion of cases as 1 in 200, troubled my mind considerably. Moreover, their occurrence did the method considerable harm, because the patients in whom they occurred and the medical men who were called in to deal with them naturally did not realise that complications are the exception and not the rule.

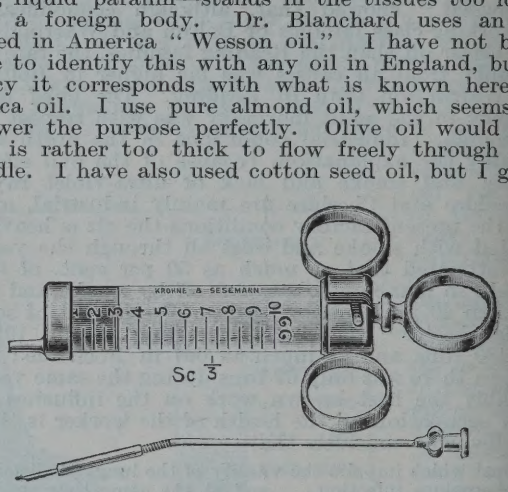
I first considered the advisability of using a weaker solution of carbolic; but I had met many patients who had been relieved promptly of all their symptoms by an injection of 20 per cent. carbolic, after other surgeons had failed to give them relief with more than the usual number of injections of 10 per cent. solution; and, moreover, although still more rarely, the same complications did occasionally arise even with the weaker phenol.

Improved American Technique.

This was the position at the end of 1926. At about that time it came to my knowledge that a different technique was being employed by proctologists in the United States, notably one which had been used very largely by the late Dr. J. D. Albright, of Philadelphia, and by Dr. C. E. Blanchard, of Youngstown, Ohio. I communicated with the latter surgeon, and he very kindly sent me various papers and a copy of his book,[3] in which the American technique is described in detail. Since early in 1927 I have been using this new method almost entirely, and, whilst the ordinary symptoms of internal hæmorrhoids—bleeding and prolapse in particular—have disappeared with the same certainty after the first one or two injections, the occurrence of severe pain and of secondary hæmorrhage has entirely ceased to worry me. In a letter which Dr. Blanchard was good enough to write to me in 1926, he remarks, "... you in England are about where we were in 1912—annoyed by troublesome complications, pain slough, &c. I have called this our grey-hair-making days." From the experience I have had of the improved technique, I am so much impressed by the absence of troublesome complications that I do not think that Dr. Blanchard's picturesque description is altogether beside the mark.

The chief differences between the two methods are that in the older one a few drops of a 20 per cent. solution of carbolic were injected right into the centre of the pile-mass, the solution being in water and glycerine; in the improved method a large quantity (some 1 to 3 c.cm.) is injected *submucously*, carefully avoiding entering the needle deeply and any risk of penetrating large vessels. The syringes which I used for injecting the 20 per cent. carbolic solution are far too small for the new method, and one holding about 10 c.cm. is necessary. Dr. Blanchard uses a gold needle fixed on a long straight stem, and provided with an adjustable screw guard, which can be set so as to allow the desired length of needle to be exposed. I have modified Dr. Blanchard's pattern of syringe, and have had one made by Messrs. Krohne and Sesemann, of Duke-street, W. 1, to my own pattern. This syringe is an ordinary 10 c.cm. "Record" syringe, with an eccentric nozzle. The barrel may be made of glass, if preferred, but glass barrels are liable to frequent breakage through boiling, so I now use a metal barrel, and there is nothing to break or to get out of order. I use a gold needle similar to Dr. Blanchard's, but with the stem bent to an "elbow" just above the guard. This keeps the point of the needle, when in use, always in view, and renders the injection very much easier than with a straight shaft. Since the syringe is a "Record," the shaft of the needle plugs on without any screw or washer, but the fit must be very good in order to obviate any risk of the syringe and shaft of the needle parting company whilst the injection is being made. The guard is not essential, but it prevents any chance of the needle being inadvertently introduced further than is intended. The gold needle does not rust nor wear out, and is easily sharpened.

The solution recommended by Dr. Blanchard is a 5 per cent. solution of phenol in any *vegetable* oil. Animal oil is absorbed too rapidly, and mineral oil—e.g., liquid paraffin—stands in the tissues too long like a foreign body. Dr. Blanchard uses an oil called in America "Wesson oil." I have not been able to identify this with any oil in England, but I fancy it corresponds with what is known here as Lucca oil. I use pure almond oil, which seems to answer the purpose perfectly. Olive oil would do but is rather too thick to flow freely through the needle. I have also used cotton seed oil, but I gave



A modified "Record" syringe and gold needle.

it up because in some patients it seemed to produce temporary headache and malaise, which do not occur when almond oil is used. If many cases are to be treated it is convenient to keep a 25 per cent. stock solution of carbolic in the oil. Pure phenol crystals should be used, and liquefied over a water bath; 1 part of the liquefied crystals to 3 parts of pure almond oil make a 25 per cent. solution. To this solution 10 grains per ounce of menthol crystals may be added. This addition was recommended by the late Dr. Albright, who regarded it as an analgesic and thought that it prevented nausea. It seems a little doubtful whether it is necessary, but I have not tried the oil without it, so I cannot speak from experience. To make up the "working solution," all that is necessary is to add 1 part of the stock solution to 4 parts of almond oil. This makes a 5 per cent. solution, of which it is convenient to prepare from 4 to 8 oz. at a time, which is sufficient, as a rule, for some 20 cases. I label my 5 per cent. solution "P-O 5 per cent." (phenol oil 5 per cent.). It keeps indefinitely, and, in consequence of the presence of phenol, it is always aseptic. I also keep a 10 per cent. solution ready prepared, but I very rarely use it, reserving it only for cases in which there is an exceptionally great tendency to hæmorrhage, which does not yield, as usual, to the first one or two injections.

Technique.

Dr. Blanchard works through a speculum known as Brinkerhoff's speculum, which is very long and tapering, rather like Mummery's speculum, but very much longer and with a slide over the fenestra. I do not like this instrument, because only one pile at a time can be seen through it, and it is therefore difficult to get a clear view of the parts. I find a Kelly's speculum, such as I have described elsewhere (loc. cit.), the handiest instrument for the purpose.

At the first treatment the injection should be made high up, at the extreme upper end of the hæmorrhoid, and for this purpose it is often necessary to go almost as high as the lowermost Houston's valve. It is for this reason that the long shaft to the needle is necessary. The needle should be inserted just under the mucous membrane so that the oil is injected into the submucous coat. On no account should any attempt be made to inject it into the centre of the pile-mass or into the vascular plexus in the middle of the pile. The injection is made slowly. No directions can be given as to the precise quantity to inject. When enough has been used, the pile can be seen swollen and whitened, and the precise point at which to stop is the moment when the superficial vessels can be seen as very fine red thread

[3] An Epitome of Ambulant Proctology. By Chas. Elton Blanchard. Medical Success Press, Youngstown, Ohio.

nning over the surface of the whitened hæmorrhoid. his is what Dr. Blanchard calls his "striation sign," and is the guide to the ideal amount of fluid to inject. A w drops more or less are of no great importance, however, d it is only by experience and judgment that the correct gree of distension of the hæmorrhoid can be gauged. very pile is dealt with similarly at each sitting. At subquent sittings one works lower until one reaches the oximity of the muco-cutaneous junction. Great care ust be exercised not to encroach upon this, or pain will evitably follow. For the same reason care must be taken ot to inject a great excess of fluid into any pile, because ie solution is apt to gravitate downwards, and, if the eatment is pressed too vigorously, the oil may find its way nder the skin and cause pain.

The interval between the injections may be from ve to seven days. Usually five injections at these tervals are required. As with the older method, ie symptoms almost invariably disappear from the oment of the first injection, and at the second sit the patient usually greets the surgeon with some ich remark as, "Marvellous, you are a perfect izard!" So rapid and absolute is the relief of mptoms that, as in the case of the 1 in 20 carbolic lution, a frequent difficulty is to persuade the tient that further injections are really necessary. sufficient injections are not given, however, the mptoms are likely to recur after a few months of mfort. During the summer of last year I was vay for six weeks, and on my return I resumed the terrupted treatment of a great many cases. Those ho had had only one injection before I left London ad remained comfortable, but symptoms were just ginning to reappear in several patients, and in all them the piles were larger than I am accustomed find in patients who have had a similar number of jections without any break. It is not as easy with is method as with the older one to decide exactly hen enough treatment has been given, because the l remains standing under the mucous membrane r a considerable time, and its pressure leads to nsiderable inflammatory thickening and consenent hardening of the piles. After about five injecons, however, the piles have diminished very nsibly in size, and, if their remains are of parchmentke hardness from their upper limit down to the mucotaneous junction, it is safe to consider that treatent has been sufficient. Here, again, it is difficult lay down precise directions in words; it is largely matter of experience at what precise point to stop eatment with confidence that recurrence is very probable. It is better to give one or two more jections than to let the patient go on his way joicing before he has really had enough.

The Pathological Effects.

The pathological effects of this method require rking out more fully. As far as I can see, the oil mains unabsorbed for a considerable time and ts up an aseptic inflammatory reaction between e mucous and muscular coats of the rectum with bsequent formation of dense scar tissue, which nds these coats closely together. The oil, whilst ll standing in position and distending the mucous embrane, keeps up a very considerable degree of essure on the vessels in the pile-mass, and the ar tissue which forms at a later stage must tend its contraction to obliterate any vessels which ve escaped the effects of the pressure by the oil elf. If the needle is inserted properly, only just neath the mucous membrane, no oil can get into y macroscopic vessel, and I have never seen nor ard of any trouble from oil finding its way into the culation. Nor is there ever any trouble from morrhage at the time of the injection, such as d to happen occasionally when the solution was liberately introduced right into the centre of the e-mass. Indeed, hardly a drop of blood escapes ring the injection—no more than after ordinary podermic or submucous injections.

Symptoms of carbolic acid poisoning might be pected, but I have never seen any, and I have never ind carboluria or other sign of carbolic acid absorption. The explanation is that the oil is absorbed extremely slowly; it has not disappeared from the sites of injection at the end of a week. In a few cases, where rather more of the oil than usual was used, there has been giddiness and "muzziness" when the patient gets off the couch. This has always passed off in 15 minutes, and is probably due rather to the menthol than to the phenol. In the very few cases in which I have used a 10 per cent. solution instead of the usual 5 per cent. there has been some pain and aching, and some of the patients have complained of feverishness and malaise. Whether these symptoms can be considered as mild symptoms of carbolic acid poisoning I do not know.

Complications seem to be rather like "snakes in Ireland"—they do not exist, beyond the very trivial ones referred to above. There is usually a certain amount of aching, which comes on about an hour after an injection and lasts for three or four hours. It is easily relieved by aspirin, phenalgin, or other drug of that type, and few patients complain much. If one has injected considerably more of the solution than is prudent, a little surface ulceration may occur, but I have not seen any real sloughing since I have used the new solution.

The treatment is suitable to all cases of internal hæmorrhoids, although where there are complications, such as fissure or strangulated irreducible piles, preliminary treatment by divulsion of the sphincter may be necessary.

Summary.

1. Use a 5 per cent. solution of phenol in vegetable (e.g., almond) oil. 2. Inject the solution under the mucous membrane and not into the pile-mass. 3. The quantity injected into each pile is usually from 1 to 2 c.cm., using Blanchard's "striation sign" as a guide. 4. If the injection is properly made, no bleeding follows with the withdrawal of the needle. 5. Continue the injections at intervals of from five to seven days until each pile is of parchment-like hardness from its upper extremity to the muco-cutaneous junction. 6. The use of 5 per cent. phenol in oil eliminates the occasional unpleasant complications which marred to a slight extent the use of 20 per cent. phenol in glycerine solutions.

The method is one which requires special instruments and very special skill and experience, and I do not think it is one to be attempted by those who only have few opportunities for its employment. But I strongly recommend it to rectal surgeons who have been accustomed to use the older injection methods; I feel sure that, when once they have acquired the necessary technique and experience, they will adopt it exclusively. Apart from an occasional complicated case, where a preliminary divulsion is necessary, its use can entirely supersede operations of the old sort, with their attendant anæsthetics, confinement to bed, absence from work, pain and dread.

I cannot conclude this article without expressing my gratitude to Dr. Blanchard for giving me so much useful information and for details of his own technique and much invaluable advice.

WORKMEN'S CONTRIBUTIONS TO A HOSPITAL.—Contributions of a penny a week from workmen, amounting to £2500, formed more than half the total income of Workington Infirmary last year. After setting aside £1000 for investment, the institution was able to carry forward £682.

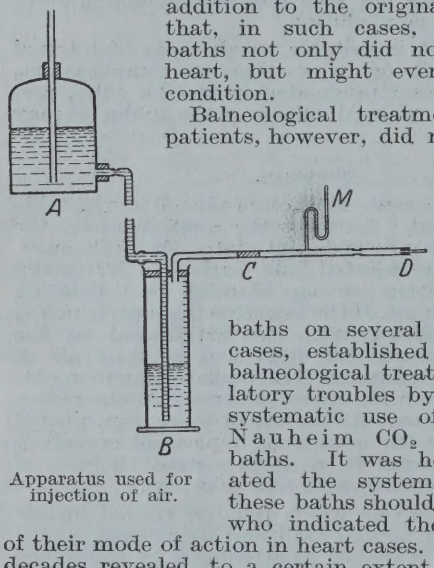
MENTAL DISORDER IN SCOTLAND.—At the annual meeting of the Royal Edinburgh Hospital for Mental and Nervous Disorders, Edinburgh (formerly the Royal Edinburgh Hospital for the Insane), Prof. G. M. Robertson, physician-superintendent, stated that nearly two-thirds of those who go for treatment do so voluntarily. The certified population of the hospital is diminishing, and he was satisfied that the day of the "certified lunatic" was drawing to a close in Scotland.

CARBON DIOXIDE THERMO-SALINE SPRINGS IN THE LIGHT OF MODERN RESEARCH.*

By ADOLF SCHOTT, M.D.
(BAD NAUHEIM.)

IT would be carrying coals to Newcastle to emphasise here the importance of physiotherapy in the treatment of heart disease, Great Britain being the country where physical treatment for an affection of the heart was recommended for the first time. It was Stokes who, in the middle of the last century, advised exercise as a method of treatment for patients suffering from "fatty heart." Baths, however, of all kinds were even then strictly contra-indicated for any heart patient, until Beneke modified the general medical opinion. Beneke showed that the Nauheim baths, then used for the treatment of rheumatism, skin diseases, &c., could also be applied in those cases where the patients suffered from a chronic affection of the heart in addition to the original disease, and that, in such cases, the Nauheim baths not only did no harm to the heart, but might even improve its condition.

FIG. 1.



Apparatus used for injection of air.

Balneological treatment of heart patients, however, did not exist until August Schott, as the result of his observations on the effect of the natural Nauheim baths on several hundred heart cases, established in 1880 the balneological treatment of circulatory troubles by means of the systematic use of the natural Nauheim CO_2 thermo-saline baths. It was he who elaborated the system upon which these baths should be given, and who indicated the main points of their mode of action in heart cases. The following decades revealed, to a certain extent, the scientific basis for this then new and purely empirical method of treatment, and a great number of details as to the mode of action of these baths on the circulation were shown by the extensive clinical and research work of Th. Schott, Strasburger, Jacob, Müller and their various co-workers, Ernst Weber, Hediger, and many others in different countries.

As the result of this work, the tonic effect of the natural Nauheim CO_2 thermo-saline baths on circulation and respiration was demonstrated, as well as the superiority of the natural baths compared with artificial ones. The Nauheim baths forming a stimulus of the most complicated kind, influencing circulation and respiration from the skin, I decided to obtain a more intimate view from another point as to the mode of action of these baths by studying their effect on the subcutaneous CO_2 and O_2 tension, these tensions being dependent on the conditions of circulation and respiration. The study of the subcutaneous gas tensions seemed to be of still greater interest than blood gas examinations, as the investigation of subcutaneous gas tensions brings us a step nearer to the tissue cell itself.

The possibility of studying subcutaneous gas tensions easily and accurately has been given to us by the ingenious method of Campbell who showed that after the injection of N_2 or air into the subcutaneous tissue spaces, an equilibrium of tension is established between the injected gas and the tissues.

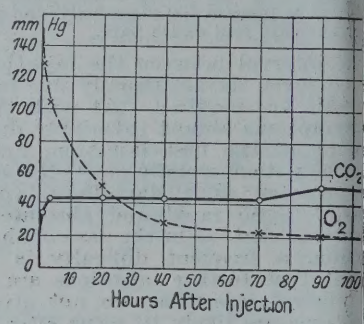
* Read before the Section of Balneology and Climatology of Royal Society of Medicine on Jan. 26th, 1928.

This equilibrium being attained the CO_2 and tensions remain approximately constant for a lo time, so that ready means are afforded of studyi the influence of exogenous factors on tissue C and O_2 tension.

Following, on the whole, the technique as elaborat by Campbell I developed a method of my own injecting air into the subcutaneous tissue spac This enabled me to perform the injection steadily a without difficulty at any speed and pressure required. The simple technique is as follows (Fig. 1):

Water is run from a Mariotte flask (A) thereby displacing air from a graduated cylinder (B) through a filter of cotton-wool (C) into a rubber tube which leads to the injection needle (D), prepared according to Campbell's instructions so that there is a minimum of dead space on withdrawal of the samples from the subcutaneous tissue spaces afterwar By observing the bubbles in the Mariotte flask, manometer (M) connected with the rubber tube, and level of the water in the cylinder, a steady injection o known quantity of air under known pressure can easily assured, the water flow being regulated by a screw clan Haldane's apparatus was used for analysing CO_2 and in the gas samples and the CO_2 and O_2 tensions calcula in the usual way.

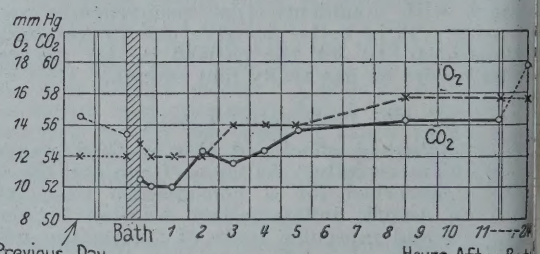
FIG. 2.



CO_2 and O_2 tension in gas under the s (rabbit) for 110 hours, following the s cutaneous injection of atmospheric

After the injection of 750–1000 c.cm. of air in the subcutaneous tissue of unnarcotised rabbits was necessary to wait until CO_2 and O_2 tensi became constant before beginning any experime I can fully confirm Campbell's statement that C equilibrium is established in about 1 hour, O_2 equ brium, however, not before 1½–3 days after i

FIG. 3.



Standing effervescent Nauheim Sprudel bath of 82·4° F., 30 minutes' duration. CO_2 and O_2 tension in gas under ski

injection. The final CO_2 and O_2 tensions provi to be in complete agreement with those found Campbell, the CO_2 tension being 45·52 mm. Hg, t O_2 tension 20–26 mm. Hg in the majority of t experiments. The equilibrium once established, t long-continued constancy of the tensions in a p ticular animal is remarkable (Fig. 2).

In order to obtain reliable results as to the effe of the Nauheim baths, care had to be taken that t animals did not inhale CO_2 which might escape fro the bath, as inhalation of CO_2 produces hyp ventilation, which leads to increased output of C and thereby influences the subcutaneous gas tensio I therefore analysed the CO_2 content of the 5 cm. above the surface of Nauheim standing eff vescent and running effervescent baths, and confirm the view that, in spite of the very large quantity

O_2 in the water, only very little escaped into the air, ıe CO_2 percentage being not more than 0·3 per ent.—this property being a characteristic of natural O_2 baths. Above strongly running effervescent ıths only, CO_2 was expelled mechanically, so that ıe air above the bath contained a relatively higher ercentage of CO_2. Therefore, a ventilator was then ıed in all experiments, thus ensuring that the CO_2 ontent of the inhaled air did not exceed 0·1 per cent. ı any experiment. The course of the experiment as the following: A rabbit was given an injection f 750–1000 c.cm. atmospheric air into the sub-ıtaneous tissue spaces by the method described ove. Four to five days later I satisfied myself that ıe CO_2 and O_2 tensions had become constant. his constancy was assured if the analyses of two mples of the gas under the skin taken at an interval several (4–24) hours demonstrated the same values the gas tensions. Then the animal was put into e bath, a further series of gas samples withdrawn om the gas under the skin at different intervals ter the bath, so that a full record of the influence the bath on the gas tensions was obtained.

The results of my investigations—10 experiments th 68 determinations of gas tensions—in which I used standing effervescent and running effervescent baths of the Nauheim spring VII, of 80–86° F. and 8–45 minutes' duration, are that a considerable fall of CO_2 tension in the gas under the skin was observed in all experiments. The decrease was 4–6 mm. Hg in the majority of the experiments, and ranged tween 1 and 10 mm. Hg, the average being mm. Hg. The minimum of CO_2 tension was ually observed ½–1 hour after the bath ended, e previous level being reached some hours later. ı the following day the CO_2 tension very often ved to be above the previous level. The O_2 tension s increased in 50 per cent. of the experiments to mm. Hg on an average, in the remaining 50 per nt. it was unaffected by the bath. The O_2 tension s observed to reach its maximum later than the nimum of the CO_2 tension. On the following day e O_2 tension either remained raised or fell to a lower el than before the bath (Figs. 3 and 4).

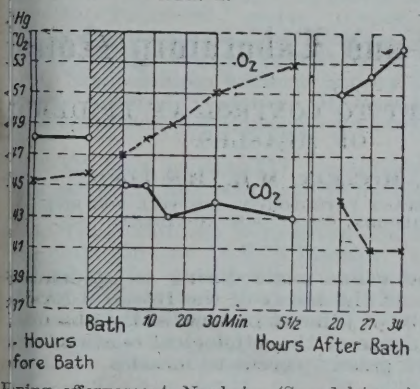
Plain water baths of the same temperature and ration proved to have the same effect on the CO_2 sion; they always caused, however, a fall also the O_2 tension averaging 3 mm. Hg, whereas the uheim baths, as shown above, increased the O_2 sion or did not alter it (Fig. 5).

In order to interpret these results we have to sider, on the one hand, pharmacological research ried out by the same method; on the other hand, earch on the Nauheim and other natural CO_2 rmo-saline baths by other methods. Realising t the subcutaneous CO_2 tension is about the same the alveolar CO_2 tension and that both are luenced in the same way and to about the same ent by experimental interferences (Campbell, mpbell and Hill), it is easily understood that reased ventilation is an important factor in ounting for the diminution of the subcutaneous O_2 tension as observed as a consequence of the Nauheim baths. This is analogous to the diminution of alveolar CO_2 tension by a great number of stimuli causing hyperventilation—e.g., baths, massage, &c. It has been proved repeatedly that baths lower alveolar CO_2 tension and, moreover, that cool, natural CO_2 baths lead to increased ventilation (Liljestrand and Magnus).

However, this interpretation is not sufficient to explain the increase or stability of the subcutaneous O_2 tension, Campbell having shown that hyperventilation produces a fall of both subcutaneous CO_2 and O_2 tensions. To understand these changes of O_2 tension the change of peripheral circulation has to be taken into consideration. We know that cardiac stimulants in corresponding doses produce changes in subcutaneous CO_2 and O_2 tensions in the same direction and to about the same extent as those observed in my experiments. A comparison between the influence on subcutaneous CO_2 and O_2 tensions of caffeine on the one hand, proved by Campbell, and a natural Nauheim effervescent bath on the other, illustrates the similarity in action of the two interferences.

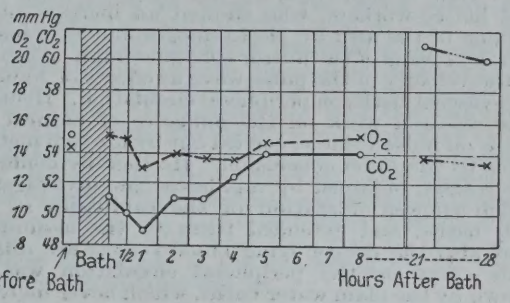
As, moreover, vasoconstricting drugs (e.g., adrenalin and infundin) and temporary stopping of the circulation by histamine cause the reverse (i.e., an increase in CO_2 and a decrease in O_2 tension) (Campbell), we have every reason to interpret the results of this experimental study by assuming that the influence of the Nauheim baths on the peripheral circulation consists in the increase of the

FIG. 4.



ming effervescent Nauheim (Sprudelstrom) ath of 82·4° F., and 10 minutes' duration. O_2 and O_2 tension in gas under the skin.

FIG. 5.



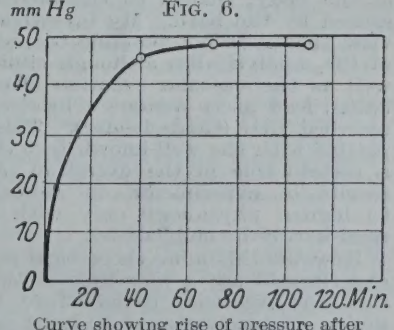
Plain water bath of 81° F., and 35 minutes' duration. CO_2 and O_2 tension in gas under the skin.

Table showing Comparison between the Effect on CO_2 and O_2 Tension in Gas under the Skin of the Subcutaneous Injection of 35 mg. Caffeine and an Effervescent Nauheim Bath. (See Fig. 6.)

35 mg. caffeine.*			Standing effervescent Nauheim Sprudel bath 82·4° F., 30 min.		
Time (min.).	CO_2 mm. Hg.	O_2 mm. Hg.	Time (min.).	CO_2 mm. Hg.	O_2 mm. Hg.
0	53	33	0	56	12
14	—	—	5	—	—
111	46	35	215	53	14

* Campbell, Jour. of Physiol., 1925, lx., 355.

FIG. 6.



Curve showing rise of pressure after injection of caffeine.

peripheral blood flow—the peripheral blood-vessels, capillaries, as well as the larger blood-vessels, being dilated.

This interpretation and conception is in perfect agreement with the results of other research work on the influence of natural Nauheim baths on circulation. Theodor Schott earlier made the same assumption on the ground of clinical observations and of blood-pressure determinations which showed a lowering of blood pressure in hypertension by Nauheim effervescent baths, even if below the point of indifference. This view is supported by the work of Strasburger and his co-workers, who showed an increase of the volume of the arm by plethysmographic examination and, by means of the mirror sphygmograph, a decrease of the velocity of the pulse-wave as effects of Nauheim effervescent baths on peripheral circulation. Hediger's new research work on the influence of natural CO_2 baths on pulse volume, carried out by his own method, leads to the same conclusion. He thereby confirmed the results, obtained by capillaroscopic investigation, which showed dilatation of the capillaries in cool CO_2 baths, and extended them to the assumption that also the deeper lying blood-vessels are dilated. This effect on the peripheral circulation was not shown by the plain water baths, which never increased the subcutaneous O_2 tension. The different effect on the subcutaneous O_2 tension produced by mineral water baths compared with plain water baths of the same temperature proves that in the action of mineral baths the temperature is not the only decisive factor, but that there is a specific effect of the CO_2 and also perhaps of the salts. Moreover, Campbell showed that changes in air temperature between 0° and 37° C. did not cause any appreciable change of the tension in the gas under the skin. When changes such as have been observed as a consequence of Nauheim baths were obtained by over-heating the animal with a carbon-arc lamp, the rectal temperature rose by 3° F., whereas cool natural mineral baths decrease the rectal temperature (Liljestrand and Magnus).

Still another point of more theoretical interest is elucidated by these researches. We have to realise that the CO_2 level of the subcutaneous tissues is lowered considerably by the baths used, and we have had to explain this fact by an increase in CO_2 output by increased ventilation. The results with regard to the subcutaneous CO_2 tension, therefore, clearly disprove the often-quoted opinion of Winternitz that the increase of CO_2 output in CO_2 baths, and the increase of the respiratory quotient to the value of more than unity, form an analytical proof of the resorption of CO_2 through the skin from the CO_2 bath. The results of my experiments, however, are in perfect agreement with the results of Liljestrand and Magnus's investigations in man, by which these authors showed that the rise of the respiratory quotient to the value of more than unity as a consequence of the CO_2 baths, is simply due to the washing out of the CO_2 of the body, thanks to the increase in ventilation caused by the bath. My investigations confirm the view that it is not possible to prove the resorption of CO_2 analytically, although clinical experience, as well as the vascular reaction characteristic of CO_2 baths, lead us to assume a local chemical action of resorbed CO_2 (Goldscheider). This opinion is compatible with the well-known fact that the skin plays a certain rôle in the excretion of CO_2. That the results of experiments on animals are applicable to human physiology only with a certain reserve need hardly be emphasised.

However this more theoretical point may be, these experiments are a new link in the chain of proofs that the Nauheim baths afford the possibility of giving a tonic treatment to heart patients by causing an alteration in peripheral circulation and by giving a tonic impulse to the heart. These investigations offer, therefore, a better understanding for the indications of the Nauheim treatment which have, of course, long been well known empirically, the chief indications being all those cases in which a tonic treatment of the circulation is needed; and also cases with genuine high blood pressure, for the reasons which foll from the points dealt with above. It would be beyo the scope of this paper to enter into the details these indications.

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Clinical and Laboratory Notes

AN ATTEMPT TO CONTROL AN EPIDEMIC OF MEASLES.

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THESE observations made during an epidemic measles in one of the wards of the Hospital for Si Children may be of interest in view of the absence conclusive evidence of the ætiological relationship the Tunnicliff "green" coccus to measles.

History of the Epidemic.

Nov. 15th, 1927: One patient, admitted on Nov. 11 developed measles and was sent home. Another patie had developed what was thought to be rubella on Nov. 1(and died on Nov. 12th of pneumonia. On Nov. 22nd patient who had been in the ward since Oct. 28th develop measles. On Nov. 23rd all the patients (26) were test intradermally with a 1/250 dilution of a filtrate from 48-hour growth of a subculture from the Tunnicliff "green coccus. This subculture had been supplied by Dr. R. O'Brien. I had no evidence that the filtrate contained a toxin. These skin tests were read after 6, 10, and 24 hou and were all negative. Six hours after these tests n patients, with no previous history of measles, were giv 10 c.cm. of (?) antitoxic serum intramuscularly. This ser was supplied by Dr. O'Brien, who stated that he had evidence that it contained any antitoxin. A note, kind supplied by him, on the preparation of this serum will quoted later. Four patients with no previous history measles went home before any serum was available. Thr of these developed measles at home.

Of the nine patients who received this serum two develop measles six days after injection of serum; one develop measles three weeks after injection of serum; four did n develop measles in hospital and had not developed a catarrhal or other symptoms 16 days after discharg one child could not be traced (no reply was received fr the parents); one child was readmitted on Dec. 1 (20 days after receiving serum and 11 days after dischar with broncho-pneumonia and laryngeal stridor, and died the same day. There were no signs or history of measl Post-mortem examination showed broncho-pneumonia on

In addition a small supply of convalescents' meas serum was available from two patients only; it was "pooled." This was given to three selected cases who w gravely ill and to whom an attack of measles would h been very dangerous.

1. Nov. 20th: 5 c.cm. of this serum were given to a c of convalescent pneumococcal septicæmia. This patient v discharged on Dec. 2nd, and had not developed measles Dec. 20th.

2. A boy with marasmus, who developed catarrhal symptoms with Koplik's spots on Nov. 29th was given 5 c.cm. of convalescent serum. He died on Dec. 2nd. No rash had developed, and therefore the blanching power of the Tunnicliff goat antitoxin could not be observed.

3. A case of paratyphoid was given 5 c.cm. of human convalescent serum on Nov. 29th. She developed measles on Dec. 13th (14 days later).

Dr. O'Brien supplied a small quantity of antitoxin prepared from a goat by Dr. Ruth Tunnicliff of Chicago Intradermal tests with 0·1 c.cm. of this were carried out on four children during the catarrhal period preceding the development of the rash in order to observe the Debré blanching phenomenon. One patient died before any rash developed and three showed no blanching.

The superintendents of the fever hospitals, to which the three "protected" cases who developed measles were sent, did not consider that there was any definite modification of the course of the infection. All three were moderate, uncomplicated measles.

Summary.

When considering these results it should be remembered that there was no evidence of the toxicity of the filtrate used in skin testing. The "antitoxin" supplied by Dr. O'Brien was prepared from horses instead of goats, and he stated that he had no evidence that it contained any antitoxin.

(1) Twenty-six patients in one ward, aged from 1 month to 12 years, among whom cases of measles had occurred, were tested intradermally with filtrate from the Tunnicliff "green" coccus. Nine of these patients gave no previous history of measles. No positive skin reactions were obtained.

(2) Nine children with no history of measles were given "antitoxic" serum. Of these, three developed apparently unmodified measles six days and a fortnight later.

(3) Of four presumably susceptible children who were not given any serum, three developed measles at once.

(4) Three children were given convalescent serum. One child did not develop measles. One infant who was probably developing measles at the time of injection died three days later with no rash. The third child developed apparently unmodified measles a fortnight later.

(5) The Debré blanching reaction with Dr. Tunnicliff's antitoxin could not be obtained in three patients.

Dr. O'Brien has supplied the following note on the "green" coccus:—

"Dr. Ruth Tunnicliff very kindly sent me cultures of the 'green' coccus which she had found constantly present in the throats of patients suffering from measles and which she was inclined to think, from immunological evidence, was the cause of measles.

"Dr. C. C. Okell, working in London, found the organism present in all the swabs from several dozen cases of measles kindly supplied by Dr. F. M. Turner and other clinical friends. We therefore injected three horses for several months with increasing doses of culture filtrate, following in all details the technique successfully used for making scarlet fever antitoxin unconcentrated and concentrated. We had no means whatever of deciding whether the serum contained any antibody. It seemed that the only proof might come from giving the serum to half of groups of people recently exposed to infection and not having suffered previously from measles. Supplies of the serum were sent to 15 medical men who wished to try it. Inquiries have brought a certain small amount of information, which I am afraid is quite unconvincing. Some of the serum was used for treatment, and in some patients was considered by the clinician in charge to have had a definitely favourable effect. Most was used in attempts to prevent infection. Unfortunately, in most of the observations the serum was given to all contacts and not to half of those with no previous history of measles. It would take considerable space to give all the figures, but they do not to my mind convey any clear proof of protection. The few attempts that have been made to get a Debré blanching phenomenon and also a skin reaction have been unsatisfactory.

"I am greatly indebted to Miss Tunnicliff for keeping me in touch with her work. In a recent letter to me she has reviewed, with restraint, the evidence in favour of her organism and has suggested the use of living cultures for immunisation; unfortunately at the moment we cannot arrange for this.

"I must freely admit that the amount of evidence against the claim of the Tunnicliff coccus to be the cause of measles is very meagre: it is difficult to get satisfactory clinical observations carried out, but I feel bound to take this opportunity afforded by Dr. McClean of saying that, to my disappointment, our work has not supplied any clear evidence in favour of the 'green' coccus."

Conclusions.

These results do not suggest that the filtrate contained any toxin nor the serum any antitoxin. There was no evidence of any antitoxin in the goat serum when tested in three patients. The evidence of protection afforded by the serum of convalescents was not satisfactory in view of the small number of patients and the fact that the serum was not pooled.

These results, which are admittedly inconclusive, are presented in the hope that they will provoke the publication of the observations of other workers in the same field. It is important that the ætiological relationship of the Tunnicliff coccus to measles should be established or disproved as soon as possible. The evidence for the prophylactic and therapeutic value of serum from convalescents should be recorded in order that those public authorities through whose hands many measles cases pass may be induced to organise the supply of suitable serum for the use of practitioners and institutions.

My thanks are due to Dr. Robert Hutchison for permission to make these observations on patients under his care; to Dr. O'Brien of the Wellcome Research Laboratories for information and the supply of the materials used; to Dr. David Nabarro, the Director of the Department in which the work was done, and to Dr. C. F. Harris, the house physician, for help in reading the tests, administering the serum, and the collection of results.

A CASE OF SARCOSPORIDIOSIS.

By A. Srinivasulu Naidu, L.M.S., B.S.Sc. Madras,
assistant to the professor of pathology, medical college, madras.

The interest of this case lies in the rarity of human sarcosporidiosis and the identification of the species discovered. According to E. R. Stitt (1923) only three authentic cases have been reported. In one case they were found in the biceps, in another in the laryngeal muscles. According to H. B. Fantham (1916) six cases are on record.

A Hindu male of 55, without occupation, was admitted to the third surgeon's wards in the General Hospital, Madras, giving 15 days' history of an abscess of the left chest wall, which had started as a small pustule and gradually enlarged to about 2 inches in diameter. No previous illness. Wassermann reaction negative and urine normal. He was fairly well nourished and had no pyorrhœa. The edges of the ulcer were indurated, the base was fungating and adherent to the muscles, and presented sieve-like openings all over. The ulcer was provisionally diagnosed as "carbuncle chest" and excised under gas. The temperature remained normal all through the 29 days he was in hospital. The excised tissue was examined and reported on as sarcosporidiosis.

Macroscopic appearances.—Just over the nipple there is an irregular excavated ulcerous area roughly 1½ by 1 in., with undermined edges and irregularly globular projections from the sides and the base of the ulcer. The margins are thick, rounded, slightly inverted, dense, and sclerotic. On section the ulcer extends only to a portion of the subcutaneous fatty layer; the underlying areolar tissue is thickened and laminated. The pectoral muscles show pin-point white specks and fine lines.

Microscopic appearances.—Numerous sarcocyst tubes are seen invading the muscle-fibres. The cysts containing the sporozoites are not uniform in size or shape. Some are large and mature with well-developed septa, while others are immature. From the tissue received the entire length of the tube could not be discovered and dissected out. The average breadth of the mature cysts is 195 to 240 microns, and there are, on the average, 64 septa, which unite in the central area as a well-defined honeycomb-like structure. Between the septa the sporozoites are packed full, whereas in the central honeycomb-like area only a few can be seen. The younger ones appear nearly round, the mature ones oval or sausage-shaped. There is a definite hyaline, non-granular, non-laminated, non-striated cyst wall of 3·5 microns

thickness all round. This stains slightly pink with eosin. The muscle-fibrils are splayed out and overlap the cyst at the ends. Two cyst cavities present peculiar appearances. In one there is a ring of large, eosinophile, non-granular, mononuclear cells with abundant protoplasm all round, both on the inner and the outer side of the cyst wall; a few of these mononuclears are seen within the cyst cavity, amidst a certain quantity of granular débris and destroyed cyst septa. There are a few polymorphonuclears to be seen outside and inside, some in the actual process of migration into the cyst cavity. The other cyst cavity is packed full of the eosinophile non-granular mononuclears and a few polymorphonuclears. No sporozoites are visible, either inside or outside the cyst.

The average dimensions of the spores are: length, 9·7 to 12·7 microns; breadth, 2·9 to 4·4 microns. Each sporozoite is sickle-shaped, with one extremity sharp and thin, and the other somewhat rounded. The nucleus, which is oval with its long axis parallel to the length of the spore, is at a distance of one-fourth of the length of the sporozoite from the thin end. At the broader end a deeply chromatin-staining spot (Leishman stain) is visible. In every spore one or two (usually two) ruby-red, small chromatin granules are visible between the deep-stained spot at the broad end and the nucleus. The rest of the protoplasm stains a ver light pink. The size of the nucleus is 3·6 by 2·0 micron No spore wall can be made out. Some spores are plum some lean, and others short, but the majority are of the sam shape and size. The plump ones assume an elongated-lan shape.

I sent the preparations to the University Edinburgh, and in June of last year they we examined by Prof. J. H. Ashworth, F.R.S., wh stated that the parasite is septate and this, alon with the general structure of the spore, indicat that it belongs to the genus sarcocystis. Many the spores, he said, are almost straight. In son respects they resemble those of globidium. "Th nucleus is near the broad end but in addition the is nearer the middle of the spore a deeply stainin granule, and in some cases more than one."

I have to thank Capt. P. N. Basu, professor pathology, Medical College, Madras, and Dr. G. James, the third surgeon, General Hospital, Madra for permission to publish these notes.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF NEUROLOGY.

A MEETING of this Section was held on March 8th, with Dr. EDWIN BRAMWELL, the President, in the chair, when Dr. KINNIER WILSON opened a discussion on

NARCOLEPSY.

He said that the word had not occurred in the indices of *Brain* between 1899 and 1926, although the older literature contained numerous references to narcolepsy. The recent reawakening of interest might be one of the periodic waves so common in neurology, or might be due to a greater frequency of the condition during the past few years. He had been on the look-out for it for 20 years, but had never seen an adequate case of it till 1927, when he had seen four cases one after the other. Others had noticed the same sequence of events. Many of these cases, however, dated back for years, and could not be the result of the recent epidemic of encephalitis. In no circumstances could narcolepsy be regarded as a disease; it was a symptom or syndrome. Consideration of the disorders in which there was increase of sleep might throw light on those of absence of sleep. It was regrettable that people were rushing into print over the narcolepsies and often ignoring previous writings on the subject.

The first patient had had irresistible attacks of sleep for two and a half years, sometimes sleeping many times a day. In addition, he had had attacks, like those described by Gélineau and known as cataplexy, in which he sank to the ground or felt that he was going to do so. He had no organic nervous disorder and, like most of these cases, had attended hospital without improvement until tired of doing so.

The second case was that of a young man who had had cataplexy for 19 months, the first attack seizing him when he learned that he had won £5 in a football sweep. Since then he had had repeated attacks under the influence of —in many instances—quite trivial emotion. He had also developed typical sleep attacks, and if he tried to avert the onset of sleep a cataplectic attack would develop. Examined in one of these cataplexies, he had been found to be in a condition of massive atonia, with absent knee-jerks, an almost imperceptible flicker for a corneal reflex, and an extensor plantar response. In about two minutes he had said "I'm all right, sir," and had got up. When again tested, his plantar response had become flexor and his knee-jerks had returned.

The third patient was a man who had had symptoms since the end of the Boer war. In addition to sleep and cataplectic attacks he had had attacks of catalepsy or trance. When sitting quietly in a chair something would steal over him and he would suddenly find himself unable to move a single joint through the fraction of a millimetre. He would lie with closed eyes, to all appearances normal, and yet "someone could come in and murder him and could not move." He had burned his fingers with t cigarette held between them.

The second case had also begun to develop cataplect attacks of the nature of trance or catalepsy, and the had actually come on in his dreams. He had dream that he could not move or make a sound, and had th awakened, but continued to lie to all intents a purposes asleep; though aware of all that was goi on, he was unable to move a finger.

Two Varieties of Narcolepsy.

If narcolepsy were regarded as a symptom, excitat in more than one direction, light would be throv on phenomena lying on the borderline between t physiological and the psychical. It was useful distinguish cases in which there were attacks cataplexy and of short sleep from those in wh ch the was prolonged sleep. Dr. Wilson has collect 45 cases of the first type from the literature of t last 40 years. The second group led into the regi of the symptomatic narcolepsies—i.e., those associat with organic disease, particularly with tumo around the third ventricle. Righetti had collect 775 cases of cerebral tumour, of which 115 had sho pathological sleep; 34·7 per cent. of tumours of t thalamus and third ventricle, 27·9 per cent. arou the medulla and pons, 26·5 per cent. of those in t vicinity of the hypophysis, and 25·6 per cent. ab the corpora quadrigemina and pineal showed t symptom, whereas only 10 per cent. of cases tumour of the central gyri had any unusual sleepine Half a dozen different ætiological factors mi produce pathological sleep: epidemic encephalitis a trypanosomiasis were notorious instances. Dr. Wils was most unwilling to separate all these as if th depended on different underlying mechanisms. preferred to say that they all had some as yet unkno basis.

In many instances the patients had not, in fa been "asleep" during attacks, as they had been aw of what had been going on around them, althou unable to move and looking as if asleep. Moreov there were all gradations between sleep and cataple Emotion might precipitate either.

A larval case was that of a young man who found t if he looked at any object he became unable to turn his e away from it, and if he gazed fixedly at anything in a reve he sank into a state of immobility. He had also an alter tive form of cataplexy, feeling that he must fall to the grou although he had never actually done so, under conditi of very slight psychological stress.

Cataplexy, Narcolepsy, and Epilepsy.

The sufferer from myoplegia or periodic fam paralysis took hours to develop the flaccid pa and loss of reflexes, while the cataplectic took secon but the condition was the same when developed. T resemblances between narcolepsy and epilepsy w greater than the differences, and the two might b

pair of Jackson's "corresponding opposites." The patient in an epileptic attack was unconscious and his limbs were in motion; in a cataplectic attack he was awake and immobile, the consciousness of the cortex fully active, with absolute outfall of tone and motility at low level. Resemblances included the recurrence, the short attack, the sudden onset, and the interference with consciousness. Epilepsy and narcolepsy had been recorded in the same patient in a number of cases.

A patient of Dr. Wilson's, a man of 21, had had nine or more epileptic fits between the ages of 2 and 14, at which age they had ceased. Recently, however, he had found that uproarious laughter would bring on cataplectic attacks in which he lost himself, turned white, fell, or sat still unable to move.

It was very undesirable to differentiate epilepsy and narcolepsy as if they were fundamentally distinct, and a prima facie case could be made out for their resemblance. They might have analogous physiological mechanisms. If many of the sleep cases were really trance-like states, cataplexy, immobility with awareness, then the phenomena were phenomena of inhibition, and the sensory stimuli in these cases were inhibitory instead of excitatory. Quite a large part of the phenomena of ordinary epilepsy was inhibitory. The patient with petit mal became immobile, dropped what was in his hand, stared. In the aura he might become blind or deaf. In the narcolepsies the same condition was carried further, and practically all the phenomena were phenomena of inhibition. Pavlov had shown that sleep was pure cortical inhibition descending to the mid-brain. If it did not so descend, the animal was not asleep, but in a state of catalepsy, fixed, and staring, with flexibilitas cerea. The catalepsy resembled what was seen in many cases of narcolepsy. Occasionally, Jacksonian epilepsy, after a sensory aura, might take the form of loss of power instead of twitching. Complete atonia was seen after the "knock-out" on the point. It would be interesting to know if the knocked-out pugilist lost his knee-jerks.

Discussion.

Dr. C. C. WORSTER-DROUGHT said that he had four cases of narcolepsy under observation and could confirm Dr. Wilson's observations. He had been looking out for cases for years, but had only seen them within the last 18 months. In his patients the sleep attacks had preceded the cataplectic attacks by two years or so. He had induced a cataplexy in one case by telling a funny story and had noted the extreme atonia and absence of arm- and knee-jerks. He regarded narcolepsy as a form of some symptom-complex indicative of an underlying cerebral disturbance. A case of syringomyelia had fallen asleep without provocation; he had had no definite cataplexies, but stated that when he laughed heartily he felt as if he were doubling up. There was a very narrow borderline between cataplexy and narcolepsy.

Sir JAMES PURVES-STEWART pointed out that in normal sleep one of the most important and constant phenomena was atonia, which was quite sufficient to account for the loss of knee-jerks. If the third ventricle were inflated with air from above, the patient at once fell into happy, peaceful sleep. If it were inflated from below, filling the subarachnoid space at the same time, there might be considerable meningeal reaction with headache. The paroxysmal character of narcolepsy had not yet been explained, and no static lesion could explain it. That was a crucial point.

Dr. WILFRED HARRIS said that it was not the sudden blow to the sensorium which produced the "knock-out"; it was the sudden violent jerking back of the head on the neck. From the technical point of view nothing was stationary, perhaps; but static lesions, in the ordinary sense of the word, could produce paroxysmal phenomena—for instance, trigeminal neuralgia.

Dr. GRAINGER STEWART had seen two or three cases of narcolepsy in the last two years, and described a case in a child with epilepsy. The child's eyes drooped, and she sank down on the table on lifting the spoon or fork with the first mouthful of a meal. He had come to the conclusion that the attacks, originally taken for petit mal, were really cataplectic.

Dr. P. C. P. CLOAKE read a letter from a patient describing vividly her narcoleptic attacks. She was in a state of mental confusion after the attacks, which appeared to be a mixture of sleep and cataplexy. As a normal individual dropped to sleep, associations became freer and freer and less connected by logical bonds. It was impossible to think of a wave of inhibition passing over the cortex, except in the sense that there was a sudden cessation of evolution of neural or psychic energy. Extensor plantar reflexes had been obtained during sleep.

Dr. H. COHEN had seen eight cases of so-called narcolepsy in recent years, three of them sequelæ of epidemic encephalitis. One patient's attacks had been precipitated by a sudden start of any kind, particularly a noise. There was an epileptic family history. Another patient, who had a spastic paraplegia dating from infancy, fell into a cataplexy on any loud noise and for 30 or 40 seconds was conscious but unable to speak, showing typical mild clonic movements. In a third case noise produced typical epilepsy. He had seen the same gradation, though not so extreme, with uproarious laughter. These cases showed some definite relationship between epilepsy and so-called narcolepsy.

Dr. GORDON HOLMES related several cases of narcolepsy. One was that of a boy who had been subject to epistaxis, which ceased when the narcolepsy began. The second suffered from cataplectic attacks brought on by annoyance. A third patient, a clergyman and schoolmaster, had suffered from headaches and attacks of falling and of irresistible sleep. He had small scotomata in each upper right and left quadrants, indicating an organic lesion. Curiously enough, his attacks had become less frequent after a course of thyroid, and had now disappeared. Dr. Holmes disputed Dr. Wilson's statement that the word sleep should not be applied to people who were conscious to some degree of what was happening around them. This was a stage of normal sleep.

Dr. R. D. GILLESPIE described a patient who had cataplectic attacks provoked by slight emotion, but not by serious frights. Another case had done well on hyoscine hydrobromide. He had observed a man in an attack two years ago and had found knee-jerks and plantar response absent and a slight ptosis of one eyelid with immobility of the pupil. Another patient was subject to attacks after a hot bath, but found that splashing cold water in his face enabled him to avoid them.

ROYAL INSTITUTE OF PUBLIC HEALTH.

PROBLEMS IN MEDICO-LEGAL PRACTICE.

ON March 7th Mr. Justice HUMPHREYS took the chair at a meeting of this Institute, when Dr. ROCHE LYNCH began a lecture on this subject by discussing

Criminal Abortion.

This was, he said, practised to a greater extent to-day than ever before, and thus presented one of the most pressing problems of forensic medicine. Quoting the relevant statute, he pointed out that it was the intention which constituted the crime; it was not necessary for an abortion to take place and, except where a woman procured her own miscarriage, it was equally a crime whether she were pregnant or not. Moreover, the statute did not in fact make any exception for abortion procured by doctors for medical reasons. Certain doctors seemed recently to have altered their opinions and to practise the operation in cases which, according to the older views, amounted almost if not quite to an illegal operation. When a doctor was called in to a case of attempted abortion he was faced with a very difficult problem of conduct. The Royal College of Physicians of London had

examined the question very carefully in 1916 and had published rules which stated :—

1. That a moral obligation rests upon every medical practitioner to respect the confidence of his patient and that without her consent he is not justified in disclosing information obtained in the course of his professional attendance on her.

2. That every medical practitioner who is convinced that criminal abortion has been practised on his patient should urge her, especially when she is likely to die, to make a statement which may be taken as evidence against a person who has performed the operation, provided always that her chances of recovery are not thereby prejudiced.

3. That in the event of her refusal to make such a statement he is under no legal obligation to take further action, but he should continue to attend the patient to the best of his ability.

4. That before taking any action which may lead to legal proceedings a medical practitioner will be wise to obtain the best medical and legal advice available, both to ensure that the patient's statement may have value as legal evidence, and to safeguard his own interests, since in the present state of the law there is no certainty that he will be protected against subsequent litigation.

5. That if the patient should die he should refuse to give a certificate of the cause of death and should communicate with the coroner.

The College had been advised : (*a*) that a medical practitioner was under no legal obligation either to urge the patient to make a statement or, if she refused to do so, to take any further action ; (*b*) that when a patient who was dangerously ill consented to give evidence her statement might be taken as a dying declaration or statutory deposition.

Dr. Lynch then referred to Sir William Willcox's letter in THE LANCET of Jan. 9th, 1915, expressing the opinion that where there was conclusive objective evidence of criminal interference the duty undoubtedly rested with the medical practitioner to inform the legal authorities ; his duty to the public in such a case overrode any obligation of professional secrecy. A learned judge had stated that no jury would convict a doctor if proceedings were subsequently taken against him for betraying confidence. On the other hand, the doctor would be put to great expense and inconvenience in obtaining that verdict. When abortion was properly performed the mortality was almost nil, but the methods used by the criminal abortionist were never those used by medical men, and an important reason for the rigorous prosecution of the abortionist was his danger to society.

Drugs Used as Abortifacients.

The varieties and combinations of harmless drugs sold for this purpose were legion. The vendor traded on the ignorance of unfortunate women, and in the lecturer's submission the sale of these substances was fraudulent. A girl had spent her life savings—about £40—on a treatment supplied to " dissolve the contents of the womb." The pills consisted of caffeine, iron salts, starch, garlic, and some herbs, of which the main ingredients were cloves and sage. The capsules contained urotropin, and the suppositories cocoa butter and zinc oxide. Not only was the treatment quite innocuous, but its cost was only a few pence.

Harmful drugs included aloes, quinine, ergot, pituitrin, strong purgatives, and some essential oils. Some caused painful contractions of the large intestine which spread sympathetically to the uterine musculature ; others caused pelvic congestion or irritation of the urinary tract. Ergot and quinine alone had any direct action on the uterus. The drugs were usually supplied in small doses, which made it very difficult for the medical witness to give positive evidence on whether they were harmful or not. Many of them could be bought without question, and it was no business of the chemist's to ask what they were wanted for. Even if drugs to cure amenorrhœa were asked for the chemist often forgot his duty to refer the customer to a doctor. Herbalists and less reputable establishments sold these drugs in large quantities at enhanced prices. The only regrettable feature about the recent case of Rex *v.* Bacon and Bolton was that it had been impossible to bring into the charge newspapers which had published advertisements of the business. If advertisements of this kind could b stopped, much of the trade would be suppressed Poisonous substances had from time to time bee used for abortion, including arsenic, mercury, pho phorus, and lead. In this case the abortion wa rather a complication of the acute serious illnes caused by the poison than a result of the drug taker The popularity of diachylon plaster as an abortifacien had greatly diminished since it had been placed i Part I. of the schedule. In the majority of case abortion would not occur even after large doses o the drugs sold, yet undoubtedly they did succee in certain cases. The successful cases did not attai publicity, but it was not credible that the preparation were entirely useless, seeing the great amounts of ther which were sold.

What is a " Noxious " Drug ?

From a medical point of view a noxious thing wa one which would cause illness, permanent injury, o death. There had been so many legal pronouncement on the meaning of the word that the result wa confusing. Two opinions threw light on it.

Archbold said : " It is not sufficient that the defendan merely imagined that the thing administered would have th effect intended, but it must also appear that the substanc administered was either a poison or a noxious thing.

2. " Where a substance is not a ' poison,' then, althoug if when administered in small quantities it may be innocuou and useful, yet if the quantity administered by the defendan is noxious, the quantity of the substance so administered b him is a ' noxious thing ' within the statute. On the oth hand, if the substance when administered in large quantiti is noxious yet if, in the quantity administered by th defendant, it is innocuous, he is not guilty of the admini tration of a ' noxious thing ' within the statute.

3. " Whether it were, in fact, a substance likely o calculated to produce that effect seems to be immateria provided the intent be proved, and the substance were poison or other noxious thing."

Mr. Justice Darling had held that where the incite knew that the drug was not, in fact, noxious o capable of procuring abortion, but knew that th woman would take it in the belief that it would hav that effect, the inciter was not guilty of an offenc but the woman was guilty of attempting to comm abortion. He had further held that if the stuff wer harmless the accused could be properly indicted fo obtaining money by false pretences, and that, further advertisements of the preparation appeare the newspaper authorities would find themselves i the dock. Nevertheless, when all was said, the questio of " noxiousness " was for the jury to decide, and the decision would rest largely on the evidence given b the expert medical witness.

The Select Committee on patent medicines ha reported in 1914 that " the existing law is chaotic an has proved inoperative, and successful prosecution fo fraud in the advertisement and sale of secret remedi is fraught with the greatest difficulty."

Mechanical Abortion.

Any foreign solution injected into the uterus woul cause it to expel its contents ; soapy water was mos commonly used. Frequent syringing of the vagin with hot liquids might produce abortion, probabl through solution of the mucous plug in the cervica canal. The varieties of sharp rigid instruments use for the purpose were legion. An occasional complica tion to their use was death from shock, immediate o delayed. Probably fear of the unknown, secrecy an the knowledge that the act was illegal all played the part in producing it. The electrical method consiste in applying a pad soaked in salt solution to the cervi and another to the abdomen. When an electr current was passed between them the uterus ofte contracted. This type of crime was most difficu to detect, and probably impossible in the absence o a burn or mechanical damage. In many cases dru treatment was combined with mechanical treatmen The limitation of these practices must depend large on the medical profession. A prosecution seldom too place unless a medical man had been called in. Th doctor might look to the lawyer to make represent

ions for an amendment of the law so as to allow more tringent control.

Blood Groupings, Blood Stains, and Paternity.

Dr. Lynch then described how the four blood roupings might be used to test the claim of a prisoner hat the blood on his clothes came from a cut made hilst shaving and not from his alleged victim. The st would work definitely on a blood stain a year or o old. The examination of agglutinable property n the corpuscle and agglutinin in the serum provided double test, and would be as valuable to prove the nocence of the innocent as the guilt of the guilty. nother application of blood groups was in the etermination of paternity. They followed strict endelian laws, and two parents of Group IV. could ave only children of Group IV. If a mother belonged Group II. and her baby to Group IV. a man of roup III. could not possibly be the father.

The Distinction between Abortion and Birth Control.

Mr. Justice HUMPHREYS pointed out the grave crease in the practice of criminal abortion in this untry. It was most important to bear in mind at birth control and criminal abortion were two tally different things. The one was highly criminal; e other might be desirable or undesirable, but it as not criminal. It was the greatest possible mistake r those who wanted to impress on a woman the nger and wrongfulness of abortion to add that it as equally wrong to try to avoid having children. any women felt that having children or not was tirely a personal matter, and if they thought their edical or legal adviser wrong about one thing they re very apt to think him wrong about the other. r. Justice Humphreys doubted whether he had any mpathy for the woman who tried to procure a iminal abortion and failed to get the stuff she anted. He had never advised the prosecution for lse pretences of persons who were deceiving those o ought to be deceived. What must be put down s the sale of drugs that the purveyors knew would all probability be used to procure abortion. In e case of Rex *v.* Bacon and Bolton the defendants d not, he was happy to say, been successful in oiding criminal responsibility because the dose ey had recommended was more probable than not fail. He saw no difficulty about the meaning of e word "noxious." All that the medical witness d to remember was that the question of intention s perfectly immaterial. A thing did not become rmful because someone wished it to be harmful. as the drug one that was likely to procure abortion? s the only question he had to consider. If he replied at in many women that drug in that dose would ocure abortion but in a great many other women would not, then he might leave it to the judge to ect the jury as to whether the drug was noxious not. One judge, at least, in such a case, would say at there was ample evidence upon which they uld find that it was so noxious.

MEDICAL SOCIETY OF LONDON.

A MEETING of this Society was held on March 12th, . H. W. CARSON, the President, in the chair. A per on the

CARRIER PROBLEM

s read by Dr. J. E. MCCARTNEY, who said that man carriers of infection were important from the int of view of the bacteriologist, the sanitarian, epidemiologist, and the physician. Their nomic aspect also was of considerable importance, ough it did not seem to be often considered. In arge Metropolitan Asylums Board institution there re always some 40 or 50 diphtheria carriers, h of which cost about £4 per week. Among eases which human carriers transmitted were hoid fever, dysentery, diphtheria, meningococcal ections, scarlet fever, pneumonia, cholera, undulant er, poliomyelitis, sexual diseases, measles, mumps, chicken-pox, and perhaps influenza. Tropical disease he did not propose to deal with. A carrier, said Dr. McCartney, was an individual who harboured and transmitted pathogenic organisms without showing the usual evidence of infection. Signs of infection could be found in carriers if they were sought for, but they were not the usual signs. The first type of carrier was the convalescent, chiefly found in diphtheria and typhoid fever. All who suffered from disease were carriers in the sense that they could transmit infection; but they were not true carriers, because they showed the usual evidence of it. A convalescing patient, however, though clinically well, might still harbour the organisms. If such a patient harboured the germs of disease for only a short time he was known as a temporary convalescent carrier, and was not very important. If he harboured them for a longer period—arbitrarily given as 12 weeks in the case of diphtheria—he was described as a chronic carrier. The other type was the "contact" carrier, who acquired the organisms from a sick person or from another carrier, and did not manifest the disease. Later, the resistance of such a person might break down, so that the disease became evident in him. If so he would come into the category of "incubationary" carriers. Many people had disease in a mild and unrecognised form, and sometimes there might be four links in the chain of infection, the fifth person alone being obviously ill, which made it difficult to trace the course of an epidemic.

Diphtheria.

At present, said Dr. McCartney, the carrier disease of greatest practical significance was diphtheria. In this, the chronic convalescent carrier was very important; chronic contact cases did occur, but they were not so common. To estimate the virulence of diphtheria organisms it was necessary to test them by intercutaneous inoculation into the guinea-pig. People who harboured non-virulent diphtheria bacilli could not, in Dr. McCartney's opinion, cause fresh cases of diphtheria—a statement which was based on a large number of observations. Non-virulent diphtheria did not tend to become virulent, and the recognition of these non-virulent cases had liberated from institutional seclusion hundreds of persons. But it was necessary to carry out the test very thoroughly. Text-books stated that cultures from the throat should be examined 12 to 18 hours after being taken, because at a later stage the bacilli were apt to be overgrown and the chances of getting a positive result were diminished. The truth was that in the case of carriers the organisms were not actually growing in the throat, and they only began to grow rapidly about seven hours after being put into a tube of broth, this interval before growth being called the "lag" period. For testing carriers the culture must be left for 48 hours, the number of positive results being 50 per cent. greater at this time than it was after 24 hours. When organisms from a chronic carrier got into the throat they might be eliminated by the defence mechanisms of the body before they had had time to excrete enough toxin to exert their pathogenic effect and overcome the natural resistance of the body. The intermittency of carriers must be borne in mind, for it was clear that a few negative results did not prove that a carrier was cured. Cases might be negative for weeks and then suddenly become positive. At the North-Eastern Fever Hospital six consecutive negatives were required, extending over a period of six weeks, before a patient with diphtheria was discharged. Whether or not a patient would become a carrier could not be decided from the clinical course of the disease, but the mild cases seemed the more likely to become carriers, especially between the ages of 1 and 5, or to a lesser extent, 5 and 10 years.

The organism in the chronic carrier did not exist on the actual living tissue of the host, but on the product of the inflammatory reaction caused by other organisms. The usual site of the organisms in throat carriers of diphtheria was the tonsils or adenoids, but the most persistent carrier and the one most

difficult to deal with was that in which the bacilli were in the nose, where they seemed to thrive on the products of chronic rhinitis associated with deflected septum and abnormal turbinates. In a series of 95 carriers, 72 had been found to have some nasal affection. Every case with virulent bacilli had to be dealt with according to its particular characters. In a throat case, removal of adenoids and tonsils would cure, but in a nasal case the proposition was very different. Homologous vaccines would clear up probably 30 per cent. of the nasal carriers, since eradication of the organisms causing the inflammation on which the diphtheria bacilli lived might lead to a cure. A mild alkaline douche was useful for clearing up a purulent discharge.

Typhoid and other Carriers.

It had been shown, Dr. McCartney continued, that about 4–5 per cent. of typhoid and paratyphoid patients were likely to become carriers, and some American writers put the proportion much higher. The chronic carriers conveyed the disease by means of their fæcal and urinary discharges and by chronic abscesses and chronic inflammation of bone. Fæcal carriers represented 93 per cent. of all the cases. The bacilli usually resided in the gall-bladder and many of the patients had gall-stones. In examining the typhoid carrier an attempt should be made to get the contents of the small intestine, and this was helped by giving a calomel purge. Women constituted the bulk of typhoid carriers; there were but few cases in children. Outbreaks of the disease in mental hospitals always left a serious carrier problem, owing to the dirty habits of the patients, and typhoid and dysentery were ever-present troubles in asylums. In the search for carriers the Widal reaction was of little use. Treatment of typhoid carriers was unsatisfactory. Removal of the gall-bladder might cure the condition, but was it justified? For urinary carriers, urinary antiseptics might be tried, but in all these carrier cases the best course was to secure the willing coöperation of the person concerned, especially as regards promiscuous urination and strict cleanliness. The public health regulations were most unsatisfactory, as they did not give full power to deal with carriers unless they were actually engaged in handling food.

Bacillary dysentery was not important from the present standpoint. Many people who had never been out of this country might be harbouring the *Amœba histolytica*. Very few convalescents from meningococcal infections became carriers, and contact carriers rarely developed the disease. The organisms were located in the upper respiratory tract, and probably did not live in the tissues, but on the products of inflammatory reaction. 300 cases of scarlet fever had been examined at the main laboratory of the M.A.B. on their discharge at the end of seven weeks, and half had been found to be carrying the hæmolytic streptococci which caused scarlet fever; but in the summer months, when there were comparatively few such cases in the wards, the proportion fell to 7 per cent. In a full hospital patients were constantly being reinfected. The carrier stage of scarlet fever he regarded as only a short one. No return cases of scarlet fever had been received.

Dr. JOHN FREEMAN said he would extend the term "carrier" to cover many other common ailments of a microbic nature. Whilst phthisis was generally included amongst diseases spread by carriers, he thought gonorrhœa should be placed in the same category. A woman with chronic gonorrhœa might show no clinical signs of the disease, but might nevertheless communicate it in an acute form by sexual intercourse. Again, a man with very septic gums might transfer the trouble to another; whilst streptococcal migration to other persons might cause a variety of far-from-negligible troubles, such as tonsillitis, laryngitis, sinusitis, impetigo, and, secondarily, rheumatism, asthma, anæmia, toxæmia. One of the things that might embarrass those who gave prophylactic catarrhal vaccine was the lighting-up of some septic focus which previously had not been obvious. All people were carriers more or less, and the bulk of disease was spread in this way.

Discussion.

Sir JOHN BROADBENT said he had hoped to hear how to cure carriers of diphtheria, scarlet fever, and meningococcal diseases, but it must be admitted that not much advance had been made in those respects. Carriers were much more numerous and virulent in times of epidemic than at other times. Scarlet fever carriers presented a very difficult problem. In 90 per cent. of cases admitted to hospital there was no history of infection, and it was difficult to know how the disease had been acquired; had the patients come into contact with cases which had not been diagnosed? Scarlet fever could be conveyed a long time after desquamation ceased, and when a case went out of hospital it was impossible to be sure it would not be a carrier. He did not know how to deal with meningococcal carriers.

Mr. ZACHARY COPE thought that it was justifiable to remove the gall-bladder of people who were spreading typhoid owing to its infection; especially as, in most of those cases, gall-stones were present. He agreed that the method of intubation practised by Vincent Lyon could first be tried.

Dr. P. R. DODWELL spoke of the success in some schools under the London County Council of a campaign of active immunisation among the children.

Dr. V. S. HODSON referred to the elaborate measures that were taken to lessen the incidence of diseases in the days before microbes were causally connected with them. Many of these precautions had since been relaxed and attention was so much concentrated on bacilli that useful means of prevention were apt to be neglected.

Dr. ANTHONY FEILING asked whether there was any effective medical treatment of a typhoid carrier who rapidly manufactured gall-stones. In one case a man of 23 took hexamine grs. 100 three times a day and developed a second attack of acute cholecystitis.—Dr. HOPE CARLTON spoke of the relationship of scarlet fever and burns in children.—Dr. WARREN CROWE asked for the proofs that scarlet fever was due to a streptococcus.

Dr. MCCARTNEY replied. The parasite and the host, he said, must always be considered together. Also the size of the dose was very important; very few people could withstand any disease if the dose was sufficiently massive. Whenever beds were close together there was always the danger of persistent reinfection. In typhoid carriers removal of the gall-bladder did not necessarily remove infection. He considered that there was ample evidence that scarlet fever was due to a streptococcus.

BRIGHTON AND SUSSEX MEDICO-CHIRURGICAL SOCIETY.

AT a meeting of this Society on March 1st Dr. DONALD HALL, the President, in the chair, a lecture on the Rôle of

Radium in Treatment of Cancer of the Breast and Tongue

was given by Mr. DUNCAN FITZWILLIAMS. One of the changes of the present day, he said, was the replacement of surgery by the use of radium in areas where it could be applied. In the tongue, radium has largely replaced the knife among surgeons who understood its use. Among the methods of applying radium was the insertion of seeds of glass containing radium emanations. These seeds were planted into the tissues and left there; the radium emanation diminished gradually and the glass capsule remained. A drawback to this method was that if it was used in a septic cavity such as the mouth, sepsis might supervene, so that the capsule could not be found in the œdematous tissue. A better method consisted

f the insertion of metal containers with a piece of ne silk attached to them so that they could be ithdrawn after a certain time; an instrument fter the manner of a trocar and cannula had been evised for the introduction of these seeds. This nethod of using radium was rather new, and it was oo soon to say whether it would hold its own, but uperficial growths disappeared as if by magic when reated in this way. Alternatively, needles conaining radium could be employed. They were of arying lengths and were made of platinum 0·5 mm. hick, so as to screen off injurious rays from the tissues. hey should contain 0·2 to 0·5 mg. of radium, and the ost useful length, he thought, was one of two inches. he needles should be left in place for a week or ten ays. Yet another method was to use tubes conaining about 50 mg. of radium, heavily screened. hese tubes were useful in some cases of carcinoma f the cervix. It was an inefficient method of treating ancer to place large doses in the centre of the growth here the cells were degenerating and harmless; it as much better to surround the growth with radium eedles so as to deal with the actively growing edge. he last method of using radium was by tubes or laques, either of the metal itself or emanations, which ere placed upon the skin. He had never obtained ood results from this method in large growths, but was a very good way of dealing with small supercial growths, such as rodent ulcers and epitheliomata f the lips.

In considering cancer of the breast, Mr. Fitzwilliams ointed out that only extrathoracic carcinoma could e treated effectively. If the cancer cells had already ained the interior of the chest, the patient would robably die of internal metastases, however widely ie original growth was removed. In primary arcinoma of the breast the knife was far superior radium in the early stages. Only in atrophic ases, in those which were unsuitable for operations nd in encephaloid cases, was radium to be recomended. The main rôle of radium was to deal with ie external metastases, and these could be treated ith the certainty of cure.

In the tongue, said Mr. Fitzwilliams in conclusion, ie disease was superficially local, but penetrated very eeply; failure to realise this depth of penetration as the cause of local recurrence after operation. eeds or needles would cause the growth in the ongue to disappear, but left a very suspicious ardness behind. For the glands in the neck blocksection, combined with the use of radium, was the est form of treatment. He strongly recommended ie use of lead in combination with radium.

DONATIONS AND BEQUESTS.—Among other bequests e late Mr. Charles Ward, J.P., of Blackpool and Oldham, ft £1000 to the Oldham Royal Infirmary for the endowent of a bed.—Mrs. Harriett Mansfield, Bristol, left £500 ch to the Bristol General Hospital and the Bristol Royal firmary, and £1000 to Muller's Orphanage, Ashley Down.—rs. Amelia Pickup, of the Towers, Hightown, Liverpool, sides other bequests left £1000 to the Blackburn Infirmary r a "James Pickup Cot," and £100 to the Liverpool aternity Hospital—Lady Hudson has made a donation of 000 to Westminster Hospital for the perpetual endowment a ward in memory of the late Sir Robert Arundell Hudson, easurer of the hospital from 1921 until 1927.—Mr. William ving Armstrong, of Hexham, Northumberland, left £1000 ch to the Monkwearmouth and Southwick Hospital, the nderland Royal Hospital, and the Hexham Memorial ospital.—Miss Cecilia Brough, of Ardmere, Dundee, left 000 to the Dundee Royal Infirmary, and £1000 each to e Royal Victoria Hospital, Dundee, and the Royal Dundee stitution for the Blind—each subject to certain life terests.—Under the will of the late Colonel Henry Doughty, rmerly a shipowner of Hartlepool and Harrogate, an itial distribution of £100,000, part of the residual estate, s been made to 20 charitable and philanthropic instituns, and the two hospitals and the Hospital Trust Fund the Hartlepools receive £5000 each; British Legion, 0,000; King Edward's Hospital Fund, £8000; the Port Hull Orphanage, £6000; Dr. Barnardo's Homes, £5000.—. Arthur Smith Graham, of Great Ambrook, Totnes, evon, left £40,000 for charities, and of this sum St. nstan's Hostel for Blinded Sailors and Soldiers will eive one-fourth part.

Reviews and Notices of Books.

THE ABDOMINAL SURGERY OF CHILDREN.

By L. E. BARRINGTON-WARD, Ch.M., F.R.C.S., Surgeon, Hospital for Sick Children, Great Ormond-street; Senior Surgeon, Royal Northern Hospital. London: Humphrey Milford, Oxford University Press. 1928. Pp. 283. 15*s*.

CHILDREN as surgical patients present special problems of their own, and the general surgeon will be glad to have the advice of a specialist in this branch put at his disposal in attractive form. The chapter on general principles is especially good, and while certain of the recommendations for treatment may not receive unanimous endorsement, this does not mean that the author has not reasons for his views. But sometimes more exact guidance is needed. What the reader looks for, and particularly the operating surgeon, in a monograph by a specialist is precise directions to assist him in the technical difficulties he meets. For example, how best to separate the very thin sac of a congenital hernia, by what method to replace an imperfectly descended testicle into the abdomen, how to perform an enterostomy for ileus and when to close it. The lack of detailed information is partly redressed by the good bibliography at the end of each chapter, but many readers would have welcomed a little digest of the teachings and experiences. Everybody will not agree with the author that the pampiniform plexus should be divided or the testicle of a child removed when it cannot be brought down into the scrotum; nor does it seem good advice to say that the size of the incision in acute appendicitis does not matter. It also makes for clearer and more accurate work to search for the collapsed rather than to follow along the distended coils in acute intestinal obstruction. While this much may be said by way of caution to the reader, there is ample evidence throughout the book of the author's large experience and close observation. For example, such useful information as why it is wrong to aspirate a hydrocele, and how abdominal puncture may be used for the diagnosis of pneumococcal peritonitis, is summarised valuably. The book is a creditable addition to an excellent series of monographs of reasonable size from the Oxford University Press, and may be confidently recommended.

FRACTURES IN GENERAL PRACTICE.

Traitement des Fractures par le Praticien. By Dr. ETIENNE, Professeur agrégé chargé du Cours de Pathologie externe à la Faculté de Médecine de Montpellier. Paris: Masson et Cie. 1927. Pp. 194. Fr.16.

THE same causes are at work in France as in England to increase the number and gravity of cases of fracture, and as Dr. Jeanbrau says in a preface to Dr. Etienne's little book, at any moment the general practitioner may find himself urgently called upon to treat such injuries. In particular this book is intended for the country doctor, who has to decide upon and apply immediate treatment, without radiographs, special apparatus, or skilled assistance, relying upon his own wits and manual skill. In such a small work it is manifestly impossible to attempt to do more than describe typical injuries and their typical treatment, and this we think Dr. Etienne has done in a manner worthy of the historic school once adorned by Rabelais.

He gives as general indications of treatment the following three rules: first, keep the patient alive by combating serious complications, such as pneumonia, damage to soft parts, or urinary infection; secondly, restore the functions of the injured limb; and, lastly, make sure of firm union. Dr. Etienne is not an advocate of immediate reduction in all cases, at all costs, but he prefers in some cases, such as

fractures of the lower end of the humerus, to proceed gradually, and even to wait several days before completing reduction. As he says nothing of anæsthetics in this connexion, it may be that this is in some sort a counsel of necessity and not of choice. The method of treating fractures of the leg and ankle, which is known in France as that of Delbet, deserves the attention which Dr. Jeanbrau calls to it in the preface. This method combines weight extension in the first 48 hours while the plaster is setting, with ambulant treatment on crutches after the first three days. The details of the application of the plaster and of the extension and of the instruction of the patient in walking are clearly described. Hardly enough stress is laid upon the importance of complete reduction and replacement of the foot in its normal position in cases of Pott's fracture—here as usual with French writers, called Dupuytren's. Without the help of X rays, however, it will be a matter of doubt and difficulty for the surgeon to assure himself and his patient that the reduction is complete and the prospect of full restoration of function sure. Moreover, unless great attention is given to detail and the instructions very closely followed we fear that the practitioner, inexperienced in such treatment, may find that the ambulant method leads to disaster as regards function.

The 144 outline drawings with which the book is illustrated are clear and helpful, and the methods of treatment recommended are as up to date as the presumed circumstances would allow.

HEART AND ATHLETICS.

By Dr. FELIX DEUTSCH, Privatdocent in Internal Medicine at the University of Vienna; and Dr. EMIL KAUF, Assistant at the "Heart Station" in Vienna. English translation by LOUIS M. WARFIELD, A.B., M.D. London: Henry Kimpton. 1927. Pp. 187. 10*s.* 6*d.*

THAT athletics are responsible for the production of certain forms of heart disease is one of those widely prevalent ideas which are based on general impressions rather than on accumulated facts. When one comes to inquire into the foundation of those impressions it is surprising to find how scanty are the accurate observations on the subject in the English and American literature, and this alone is sufficient to justify Dr. Warfield's translation of the work by Drs. Deutsch and Kauf. The authors have had at their disposal a plentiful supply of material, a supply which, as regards swimmers at any rate, must be almost unique, since the Austrian Swimming Society made it obligatory for all of its members to be examined at the "Heart Station" in Vienna. Attention has been concentrated chiefly on the question of cardiac enlargement, and this fact leads one to make two criticisms of the methods employed. In the first place, is the transverse diameter of the cardiac shadow an adequate index of cardiac enlargement? And secondly, are there not other definitely measurable phenomena which may signify impairment of the cardiac function even in the absence of enlargement?

The material is divided into two main groups: (1) those who take exercise for pleasure, and (2) those who go in for competitive athletics. In the first group there is no evidence that athletics produce cardiac enlargement over and above that which might be expected to be associated with the general improvement in physique. Even in the second group the majority of the individuals studied have hearts of normal size, but in a certain percentage there is definite evidence of abnormal cardiac development. This percentage varies for different types of sport, being highest in rowing. Ski-ing, cycling, swimming, and wrestling come next; it is surprising that running comes low down on the list. The authors consider that emotional factors play an important part in determining cardiac enlargement, but the evidence they produce in support of this opinion is inadequate. An interesting chapter is devoted to the variation in size of the heart, recorded in particular cases, during the course of training, and to the criteria employed for deciding whether training should be allowed to proceed. Though many of the observations on which this book is based are of undoubted importance, some of the deductions from them fail to carry conviction. More evidence on the subject should be collected from various countries.

CHEMOTHERAPY AND SYPHILIS.

Principles and Practice of Chemotherapy. With special reference to the Specific and General Treatment of Syphilis. By JOHN A. KOLMER, M.D., Dr.P.H., D.Sc. (Hon.), Professor of Pathology and Bacteriology in the Graduate School of Medicine of the University of Pennsylvania; Member of the Research Institute for Cutaneous Medicine. London and Philadelphia: W. B. Saunders Company. Pp. 1106. 55*s.*

THIS monograph is based on Prof. Kolmer's book entitled "Infection, Immunity, and Specific Therapy," which he has enlarged and rewritten.

The author begins with a section on the principles of chemotherapy and traces its history back to the discovery of mercury as an antisyphilitic agent in about the year 1500. He then discusses at some length the chemotherapy of various types of disease before passing to the consideration of syphilis; the pharmacology and toxicology of antisyphilitic medicaments and the methods of their administration are dealt with in great, even too great, detail. For example, in the single section, where the technique is described for venous puncture, intramuscular and subcutaneous injections, spinal, cistern, and ventricular puncture and injection, there are some 40 illustrations, many of which are very similar one to another and quite redundant.

More than half the volume is taken up with experimental work on rabbits and guinea-pigs, inoculated with syphilis or other protozoan diseases in relationship to chemotherapy. Various drugs, well and less well known have been employed, and an enormous amount of painstaking work has obviously been done. Experimental work with silver arsphenamin showed a great variation in the spirocheticidal power of various batches of the preparation, but seemed to give a higher therapeutic index than arsphenamin. Arsphenamins of copper, gold, and platinum were found to be more powerfully bactericidal than arsphenamin, but less than silver salvarsan. Prof. Kolmer believes that in syphilis after each injection of salvarsan or neosalvarsan, spirochætes are destroyed 24 to 48 hours after injection "by the therapeutically active oxidation or reduction products, followed by the development of some immunity principles engendered by the antigenic substances released from the destroyed spirochætes. According to his theory these immune substances at least aid in holding the activity of spirochætes in check or latency, if they are not actually destructive for them. He shows experimentally that by giving subcurative doses of salvarsan and neosalvarsan, spirochætes can be rendered resistant to these substances, both in vivo and in vitro. This has been known for some time by syphilologists in active practice and gives the basis of therapy by repeated large-sized doses of salvarsan. Dr. Kolmer found mercury compounds to be much less spirochæticidal than the organic arsenic products. As regards bismuth administration, he holds that the toxicity depends not only on the percentage of bismuth in a preparation, but also on the speed with which it is absorbed. French observers have been emphatic as to the dangers of the intravenous administration of bismuth. Dr. Kolmer gives, as complications after intravenous bismuth, dyspnœa, cough, and thoracic oppression. Jarisch-Herxheimer reactions are dealt with fully, and the grave risk of starting to treat tertiary lesions with large doses of salvarsan or neosalvarsan is noted.

The author's treatment of primary and secondary syphilis is much more intensive than is usual in this country, since he gives, to begin with, three *daily*

ccessive doses of 0·6 g. of a 914 preparation followed
r six more injections of 0·9 g. at the rate of two a
eek. His treatment of later syphilis is more in
cordance with European methods, and his comments
the importance of regarding the old syphilitic case,
th persistently positive Wassermann, as an imper-
ctly cured case, and therefore a potential menace to
mself and the offspring, will give satisfaction to the
actical syphilologist. Part of his antenatal treat-
ent of a woman with a positive Wassermann reaction,
ensure a healthy fœtus, would not meet with
proval in this country, since Dr. Kolmer is an
vocate for inunction of mercury thrice weekly, for
least a month, preferably longer. This mode of
atment is, in our opinion, unnecessarily tiresome
mpared with any result gained; but the author's
her recommendations as to intravenous injections
614 and intramuscular injections of bismuth during
egnancy are in accordance with European methods.
ere is no reference, anywhere in this book, to the
e of sulphur as a preventive of toxæmia—either in
e form of contramine or of sodium thiosulphate.
e use of a glucose drink before the administration of
senical derivatives is evidently not in vogue in
nerica. An undue amount of space is occupied with
scriptions of alternative methods of administration
mercury and iodides.

The book is a strange combination of a review of
perimental laboratory methods with a manual of
nical instruction suited to those who have not even
elementary knowledge of the modern technique in
philis. The author has included all the recom-
nded drugs and methods of treatment, including
n-specific protein therapy and malarial inoculation,
d his bibliography is enormous. But it is difficult
see for what class of medical practitioner the book
s been written.

RECASTING EPIDEMICS.

Climate and Disease Incidence in India: Fore-casting Epidemics. Being the twenty-ninth Robert Boyle Lecture. By Sir LEONARD ROGERS, C.I.E., M.D., F.R.C.P., F.R.C.S., F.R.S. London: Humphrey Milford, Oxford University Press. 1927. Pp. 39. 1*s.*

THIS little booklet embodies the Robert Boyle lecture
1927 which threw light, from the special angle of
e author's experience in India, on the vexed subject
the epidemic constitution. The varied climate of
dia presents unique opportunities for studying the
ect of meteorological factors on different diseases.
e lecturer found that leprosy, rainfall, and humidity
clined steadily from east to west up the Gangetic
lley, whilst the unfavourable effect of rain-bearing
nds on tuberculosis was amply confirmed. Small-
x showed a marked decline during the south-west
nsoon, but the essential factor seemed to be the
solute humidity of the atmosphere. The same
tor plays a large part, Sir Leonard Rogers considers,
the incidence of cholera, and he points out that,
hough variations in the weather are outside the
here of preventive medicine, much can be done by
ncentrating sanitary armies at the points of danger
these can be forecast. All who are concerned with
idemiology or with the prevention of disease in
dia will find much to interest them in the lecture.

UBERCULOSIS.

Contributions to the Study of Tuberculosis. By Research Department, National Jewish Hospital at Denver. Vol. VII.

THIS volume reflects credit on the director and his
lleagues. The report contains a mass of material,
vided into three sections. The introductory section
chiefly biographical and consists of addresses given
well-known pioneers of medicine. The second
ction is devoted entirely to laboratory research.
e third deals with clinical contributions, such as
e surgery of pulmonary tuberculosis, tuberculin,
cidental pneumothorax, the treatment of bronchial asthma, and essays on diet. The research section gives a number of original communications reprinted from the *American Review of Tuberculosis*, on the variability of the localisation of tuberculosis in the organs of different animals; several papers on tissue reactions to *B. tuberculosis*, and also some work on the cytomorphology of the tubercle bacillus. The work on the variability of localisation of tuberculous lesions in various animals is of particular interest. Here it is shown that the extent of the distribution of tubercle bacilli to the various organs is alone insufficient to explain the lesions. In addition to the ability of the cells of the histological tubercle to destroy the bacillus, changes in oxygen tension in tuberculous foci are shown to be sufficient to change a quiescent focus into progressive disease.

IMMORTALITY.

By I. HARRIS, M.D. London: Williams and Norgate, Ltd. 1927. Pp. 68. 2*s.* 6*d.*

THIS book deals with man's place in the universe and the meaning and goal of existence, and its number of pages indicates the fragmentary character to which the author confesses in the preface. But his attempt to describe a momentary glance or fleeting impression of a realm difficult to conceive is a brave one. Assuming that the opinion is gaining ground that the different elements are compounds of one really elementary body, and that at the basis of all diversity there is unity, he regards existence as a uniform thing, our phenomenal world being the realisation of different states of matter, while death, or complete dormancy, is the condition where the phenomenal world is non-existent, all diversity being swallowed up in uniformity. On the subjects of individuality and the universe as a self-creating and self-regulating entity he finds that individual life can be accounted for only by universal life and momentary existence by eternal existence. A chapter on religion is an endeavour to find a creed in harmony with modern progress, and the riddle of immortality is left unsolved in a final chapter.

PROHIBITION.

Its Economic and Industrial Aspects. By HERMAN FELDMAN, Ph.D., Assistant Professor of Industrial Relations, Dartmouth College. London and New York: D. Appleton and Co. 1928. Pp. 415. 7*s.* 6*d.*

IT is as difficult for anyone in this country to get a sure idea of the effects of prohibition in the United States as it is to find out exactly what has happened in Russia; most commentaries on both situations are confessedly biased one way or the other, and any which seem objective and neutral in outlook are naturally suspect. But Dr. Feldman says that his account is no more than a summary of the most exact facts which he has been able to ascertain, and a reading of his book fails to suggest any other attitude on his part. It is then prima facie worth attention. He limits himself to the economic and industrial aspects of the Volstead Act, and moral, political, and social questions are left on one side. Prohibition meant at the first a considerable loss in property to the brewing and distilling trade, some loss to farmers who grew barley and hops, and an unimportant loss in taxation. These were temporary. Taking a longer view, he finds that employers are overwhelmingly favourable to prohibition as it affects production and business. The money formerly spent on drink now goes to other things, and there is a general agreement that the standard of living of the worker is much higher. There is no doubt that Dr. Feldman thinks that the balance works out strongly in favour of prohibition. But he is uneasy about the future. Prohibition has certainly not stopped drinking, and probably never will stop it entirely, and since 1920 the statistics for alcoholic deaths, alcoholic destitution, and arrests for drunkenness have all shown an upward direction.

MEMORIAL FUND TO SIR DAWSON WILLIAMS.

THE following is a list of the first subscribers to the Memorial Fund in honour of Sir Dawson Williams. It was rightly decided that the movement for a testimonial, which was started in the week before his death, should continue, and that the resulting Fund should be employed in the institution of a memorial to him connected in some intimate and apt manner with the advancement of medicine. The Fund remains open for a time in order that answers to the appeal may be awaited from medical men resident abroad.

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KING'S COLLEGE HOSPITAL.—It was reported the annual court of governors that a ward set free by t removal of the Massage School to a neighbouring house being used as a substitute for any ward that is being clean and renovated. It is hoped presently to erect two, perhaps three wards for paying patients. The number treatments given in the Physical Treatment Departme has increased from 40,000 in 1921 to over 81,000 in 1927.

CHILDREN'S HOSPITALS.—The King and Quee have consented to perform the opening ceremony in Ma next of the new Princess Louise Kensington Hospital f Children. Their Majesties have, however, made it a cond tion that the building shall by then be free of debt. T amount still needed is £9250, but £1000 has been promise by the King's Fund, and £500 from another source, bot conditionally upon the full amount being raised.—T annual report of Birmingham Children's Hospital show that last year the total number of children admitted w 5274, nearly 1000 more than in 1926; the average dail number of inmates was 145. To relieve the growing pressu upon the hospital it is proposed to add two wards of abo 40 more beds at a cost of £10,000. A speech defects clin was begun in July last, and the private ward continued t be a successful adjunct.

THE LANCET.

LONDON: SATURDAY, MARCH 17, 1928.

PAINLESS CHILDBIRTH.

THE due provision of anæsthesia during labour is ot so simple as it appears at first sight, or to those ho have not considered the problem as it affects he motherhood of the nation as a whole. On one spect only of the subject was complete unanimity isplayed during the discussion recently held at the oyal Society of Medicine.[1] That unanimity was xpressed regarding the desirability of using anæsietics for confinement cases. It was pointed out, ith undoubted truth, that it would be a national dvantage for women to be rid of the traditional ar of the pains of childbirth, and for them to know iat the process might be made at least as painless ; any ordinary surgical operation. Too many omen are deterred from motherhood, or their safety threatened, by that fear of pain which, as Dr. ARDLEY HOLLAND pointed out, is instilled into eir minds from childhood upwards by words in the ook of Common Prayer, if not from other sources so. A new tradition of painless labour should be opagated. And it must be founded on fact. It is t enough to show that a confinement can always freed from any grave amount of pain. It must tually be made free. Of objections to the use of æsthetics during labour those based on religious ounds are now happily regarded as dead and buried. ater opposition has depended on the belief that the æsthetics delayed labour, or were injurious to the other or the child, or to both. The truth is that, operly employed, anæsthetics need never delay d can actually expedite the child-bearing process. r there is a stage of that process when the patient ay do all she can to retard the oncoming head owing the agony of pain which its advance is causing. algesia or anæsthesia at this time will, as was inted out at the discussion, lead actually to a minution of the time spent on giving birth to the ild. Though it is true that all anæsthetics have perimentally been shown to have the power to lay the contractions of the uterus, there is much ference between their use in order to demonstrate is fact in the laboratory and their skilful clinical ployment. When properly used anæsthetics can olish pain at a normal confinement without delay- progress. This proper use implies a method by ich a state of analgesia, rather than anæsthesia, kept up intermittently throughout the greater rt of the time. Between the "pains" the patient mbers, at the "pains" she inhales anæsthetic ough to keep her free from pain, and this state is shed to true surgical anæsthesia only at the critical t of the expulsive stage, or at the accoucheur's uest.

There is more than one way of obtaining this ired state of analgesia and anæsthesia. It seems be admitted widely that the ideal is reached by skilled employment of nitrous oxide and oxygen, most ideals are difficult of attainment, and this o exception. In fact, it may be said with truth that the use of nitrous oxide and oxygen for confinements is impracticable in the vast majority of cases. Certainly it can be employed in institutions, nursing homes and hospitals, and in private houses if special arrangements can be made, but there must be a narrow bed and there must be cumbersome apparatus. Given these and a skilled anæsthetist prepared to devote unlimited time to the case, then a normal confinement can be conducted so as to save all pain and so as to leave the patient less disturbed by the process than is possible in any other circumstances. Nitrous oxide is, of course, a non-toxic anæsthetic; the metabolism of mother and child is entirely unaffected, and the uterine contractions of labour are neither delayed nor diminished. The same advantages cannot, all of them, be claimed for the anæsthetic most commonly employed for confinements in Great Britain—namely, chloroform. Notwithstanding its defects, however, most of the speakers at the discussion to which we have referred were prepared to defend and advocate its employment. This may at first sight seem strange when we remember the almost general condemnation of chloroform as a routine anæsthetic for operations nowadays. Nevertheless the apparent contradiction is fully justified. The proper use of chloroform in midwifery is very different from its use for surgical operations. The conditions are different and the object aimed at is different. To begin with, there is in the woman in labour an entire absence of that psychic danger which arises from fear of taking the anæsthetic. The woman in labour, so far from being afraid of an anæsthetic, is crying out for one. This rules out in her case that formidable and not entirely explicable risk which is involved in the induction of anæsthesia by chloroform in a patient who is fearful of it. Again, the drug is used during labour, when it is used expertly, in such a way that a condition of little more than analgesia is produced during the attacks of pain. It is entirely withheld in the intervals, and surgical anæsthesia is produced, if at all, only when the head is passing over the perineum. The accumulated evidence of years supports the contention that in skilled hands chloroform can be more safely used in confinements than in general surgery. When abnormal labours or obstetric operations are concerned most anæsthetists, we believe, prefer ether, and assist the case on ordinary surgical lines. The use of twilight sleep as the chief means of avoiding pain does not appear to have many supporters, but a modified use of sedative drugs—chloral, omnopon, morphia, and scopolamine—early in labour is evidently favoured by those best qualified to speak, and is practised in conjunction with anæsthetics. What is known as "synergistic anæsthesia" has not been widely employed in this country. It often involves several intramuscular injections as well as a rectal injection. On a priori grounds the rectum would not usually be selected as a convenient introductory route in the pregnant woman, and it does in fact appear that sometimes there is difficulty in getting the catheter past the fœtal head. Moreover, the patient not infrequently expels the rectal injection. (This was indeed alluded to by one sarcastic speaker as the sole recommendation of the method.) These disadvantages would have to be ignored, of course, if the method were shown to have the great superiority claimed by its American originators, but from their own country there has lately come a well-supported review[2] of "synergistic anæsthesia" which is by no means encouraging. It is here stated that

[1] See THE LANCET, March 10th, p. 498.

[2] Jour. Amer. Med. Assoc., Dec. 17th, 26th, 31st, 1927.

"GWATHMEY and his associates have attempted to develop a method of anæsthesia without an adequate experimental basis; hence they have fallen into errors which could have been avoided, and GWATHMEY has based theories on erroneous views which have been accepted and repeated by other writers." Strong arguments are adduced against the actual occurrence of the synergism described as resulting from the coöperation of morphia and magnesium sulphate and ether in the technique recommended by GWATHMEY, while it is admitted that "the action of morphine on the respiratory centre is synergistic with that of ether and magnesium sulphate, and that numerous deaths have resulted from their combined use."

Whatever be the method of anæsthesia decided on as most generally desirable in obstetrics, the great practical problem in this country still remains unsolved. That problem is how to bring this desired anæsthesia within reach of the great majority of child-bearing women. At the present time a large majority of the children born in England are born under the ægis not of a medical man but of a certified midwife. The midwife has no authority to use, and no training in the use of, anæsthetic drugs in the second stage of labour, although under the rules of the Central Midwives Board she is at liberty to administer sedatives such as morphia, chloral and bromide in the first stage and has received appropriate instruction. Should this arrangement be extended so that these women are trained in some specified safe, simple anæsthetic administration? If that expedient is not resorted to, in what way is the medical profession to answer the demand which it is making—that every child-bearing mother should be relieved of her pain at labour? The problem is a thorny one. There are members of the profession who believe that the use of anæsthetics is already not sufficiently safeguarded, and who would like to see a special diploma instituted to mark out the man who has special skill and knowledge in this department of practice. The mere idea of a midwife using anæsthetics at all would obviously be anathema to those who think thus. We can make no pretence to offering a solution of the problem of supplying adequate anæsthesia for obstetrics in the country at large; but the recognition that a problem exists is the first step towards its solution, and we hope that the questions involved will receive serious attention. They merit it.

LEGAL COMPULSION IN VENEREAL DISEASE TREATMENT.

A RECENT account of venereal disease legislation in Germany touches significantly upon the problem which the Edinburgh Corporation Bill has brought into prominence. Writing on the new German law in the *World's Health* for March, Dr. ROESCHMANN, of Berlin, naturally dwells upon the familiar fact that many patients, either from ignorance or callousness, neglect their treatment before they are completely cured, and thus become liable to dangerous relapses which make them a constant peril to others. On this account, he says, the national insurance institutes in Germany organised in 1916 antivenereal observation stations which exercised a sort of supervision by summoning patients to report until completely cured. The system was voluntary; if the patient ignored the summons, he could not be compelled. The new German law preserves the voluntary principle as far as possible, but reinforces it with compulsion. In future if a patient breaks off his visits his doctor will first ask him to resume treatment. On refusal the doctor will report the case either to the observation station or to the health authorities which in their turn will summon him to resume the course. These two summonses will contain no threat; it is only when the patient refuses to comply with the summons of the health authorities that coercive measures will be taken, involving compulsory treatment and (if necessary) detention in hospital. The change in the law is that the health authorities can enforce compulsion which was not—and still is not—within the competence of the observation stations. Treatment involving serious risk may not be prescribed without the patient's consent. He may choose his own doctor, and the doctor may choose his own method of treatment; treatment of this class of disease is confined to doctors qualified to practise in Germany. The new law abandons compulsion in respect of the police regulation of prostitution, but it allows the competent health authority to require a person suspected of spreading infection to present a medical certificate or to submit to medical examination in an approved hospital. Doctors, as Dr. ROESCHMANN observes, have always tried to obtain voluntary evidence of the source of a new infection and to persuade the person responsible to submit to treatment. In the event of refusal there was, however, no other legal remedy than the cumbrous invocation of Articles 223–4 and 230–1 of the Penal Code which provided penalties for the infliction of bodily injury with or without malice aforethought. This latter step was rarely taken because the person concerned shunned publicity and because the medical profession was bound by its rule of secrecy. Henceforth, says Dr. ROESCHMANN, doctors are free to report sources of infection to the health authorities in Germany, since the employees of the health services are themselves bound to keep professional secrets. Further, he adds, the notification of a case to the health authorities involves no inconvenience to the patient; it is only when the patient refuses to submit to treatment that coercion begins.

These extracts deal with but one aspect of the new law passed in 1927 by the Reichstag and depending in part upon detailed regulations with which the several States of the German Republic have subsequently supplemented the Reich law. The extracts have been selected for their bearing upon the Edinburgh Bill controversy. In that controversy all parties have really but a single purpose—to stamp out venereal disease at the earliest possible moment. Their only difference is as to method. The Bill, say its opponents, relies upon compulsion when the full possibilities of the voluntary system have not yet been exhausted. The general medical practitioner, they say, is not always competent to use modern technique for the detection and treatment of syphilis and gonorrhœa; the Bill will lead to the giving of medical certificates of freedom from infection which will not always be trustworthy. There is a threat, say the opponents of the Bill, to the profession's tradition of secrecy, a danger of abuse of the denunciation of suspected persons. Compulsory notification they continue, might be largely ignored by private practitioners, so that the only persons penalised would be those attending venereal disease centres. The effect of the Bill, they contend, would be to deter the infected person from reporting for treatment or to induce him to give a false name and address to even a greater extent than such persons do already. These arguments are undeniably weighty; it is f

Parliament to say if they overweigh the considerations urged in favour of the Edinburgh experiment. There are plenty of examples of the process by which a progressive movement in public health, tentatively initiated by a local authority, has afterwards been adopted by the Local Government Board or its successor the Ministry of Health. The standard of public health legislation throughout the country is raised by broadening the application of new principles which have been found successful locally.

The first question is whether the voluntary system can eradicate venereal disease in a reasonable period. If the answer is in the affirmative, there is no other question. If it is in the negative and if the voluntary principle is to be reinforced, it is difficult to see what better safeguards can be devised than those in the Edinburgh Bill. Those conditions seem to have been attained in which the Trevethin Committee was prepared to advocate experimental local legislation. Australia has tried compulsion with results which baffle observers at a distance. Edinburgh offers to make the experiment nearer home; her public health record is known and her medical staff is trusted. Parliament has to say whether the experiment shall or shall not be made.

THE PREVALENCE OF RESPIRATORY DISEASES.

ALTHOUGH cancer is the cause of death which attracts most public attention and its proportional share of the gross mortality is large, 11·7 per cent. in 1926, the toll taken by the non-tuberculous diseases of the respiratory system—of which pneumonia and bronchitis are far the most important—is much greater. In 1926 15 per cent. of all deaths were due to diseases of the respiratory system (exclusive of tuberculosis). In his annual report for 1925, Sir GEORGE NEWMAN devoted special attention to the problem of the respiratory diseases. Reviewing the evidence suggesting that some part of this mortality was preventable he wrote as follows:—

"We cannot *prove* in a logical and convincing way that climate, or the pollution of the atmosphere with smoke, dust and other ingredients, are directly murderous, but we know by experience that their presence is inimical to all forms of life, just as we know that sunlight and fresh clean air are favourable to vitality and resistance to infection. Every form of industrial or mechanical contrivance which either prevents or reduces pollution of the atmosphere is a contribution to the public health, and this aspect of the problem calls for the continued and vigilant attention both of authorities and those responsible for commercial concerns. But this is not all. There is needed an increase in the knowledge and practice of healthy living. Much can be done by personal prudence, by cleanliness, by exercise, by correct breathing, by domestic ventilation, and by the practice of individual hygiene."

In this issue we print an interesting study of the data from the statistical point of view by Miss H. M. WOODS, of the London School of Hygiene and Tropical Medicine. In an earlier paper Miss WOODS gave reasons for thinking that the pneumonia of childhood is more sensitive to environmental conditions than that of later ages. Thus she found that the net, or partial, correlation between the death-rate under five from pneumonia and the percentage of the population overcrowded (the data were the statistics of the London boroughs, 1921–23) when the death-rates from pneumonia at ages 45–64 and 65–74 were held constant, was large and positive. On the other hand, the pneumonia death-rate of middle life was only moderately, and that of old age not at all, correlated with the measure of unsatisfactory housing. Her present paper deals with the subject in a more general way, and her account of the statistical difficulties in the way of evaluating the precise influence of such factors as temperature and air pollution upon the rate of mortality will be welcomed by those who have, perhaps, felt some impatience with the hesitancy of statisticians in pronouncing judgment. The evidence collated by Miss WOODS, who rightly gives prominence to the observations of Prof. E. L. COLLIS, plainly strengthens the case from which Dr. STEVENSON and Sir GEORGE NEWMAN have inferred that a large element of the mortality from respiratory diseases is indeed preventable, just as it confirms the view that there is no *one* noxious factor the elimination of which would be effective. Miss WOODS has displayed a reticence, not always observed by students of public health problems who are not members of the medical profession, in discussing the purely medical aspects of the subject. But medical readers will surely endorse the implication of her last paragraph and its relevant quotation from the Chief Medical Officer of the Ministry of Health's report for 1923: "The time has come when the whole question of using isolation hospitals to greater advantage calls for the consideration of local authorities, and it may well be that fuller regard should be paid to patients suffering from respiratory disease." It is to be feared that many victims of pneumonia are not at present receiving that skilled nursing and attention which are the beginning and end of successful treatment.

Annotations.

"Ne quid nimis."

ASTHMA RESEARCH COUNCIL.

FEW problems in medicine present a more fascinating study than that of asthma. During an attack the patient often appears to be in extremis and his sufferings are pitiful to watch; yet shortly afterwards he is in perfect condition and he may even be a successful athlete between his attacks. On seeking a cause we are struck by the variety of conditions which may give rise to an attack. One subject may suffer only at the week-ends, another only at certain seasons of the year. Climate affects some asthmatics but has no effect on others. Some are at their best in a bad London fog. Dust plays an important part, and so sometimes do the emanations from certain animals. Particular articles of food will invariably bring on an attack with some victims, while with others diet seems to make no difference at all. There is a strong neurotic element in many cases and several members of one family may be asthmatics. With such a variety of exciting causes it is obvious that to find any treatment, the basis of which is to remove the cause, will be a matter of considerable complexity, and no one can wonder at the large number of so-called cures on the market. Further, difficult as it is to prevent a recurrence of the asthma, it is usually a simple matter to relieve the symptoms during an attack and the majority of quack medicines aim solely at relieving the bronchial spasm. Amongst the many peculiarities of asthma are the diseases with which it is often associated. A patient may suffer from severe eczema and asthma alternately, another may have epilepsy, urticaria, angio-neurotic œdema, or some other affection, but they usually come separately, so that whilst suffering from eczema he is free from asthma. Sufferers, as a rule, are free from

attacks during pregnancy or during an acute illness, such as enteric fever.

In order to study these problems certain sufferers from asthma have formed an Asthma Research Council and have appointed a Medical Advisory Committee. The Council are anxious for help, especially from sufferers, and an appeal has been sent to the medical press in the hope that doctors may get the support of their asthmatic patients. There can be little doubt that research into these problems will be of substantial value. The personal experiences of a large number of individual asthmatics should provide a wealth of material from which much information may be obtained. Organised research is the only way of investigating the numerous problems presented by asthma and its allied conditions. The Asthma Research Council, in their appeal, suggest a number of lines along which the investigation may proceed, and the phenomena of sensitisation and desensitisation are of special interest. It has been observed that shock of any kind will desensitise some asthmatics for a time and shock therapy has a recognised place in the treatment of asthma. Shock may be induced by an intravenous injection of any foreign protein, and peptone is frequently used, but shock resulting from an accident, such as a brokem leg, frequently renders the patient free from asthma for some time. Desensitisation, in the strict sense of destroying the patient's sensitiveness to some specific substance, is also a matter for careful consideration. It is not known to what degree an immunising substance acts by virtue of being a foreign protein. Tuberculin has been used in the treatment of asthma and good results have been observed in some cases. This gave rise to a belief that tuberculosis was in some way connected with asthma, whereas in all probability the tuberculin acted simply as a non-specific protein—it may be noted that similar results have been obtained by injecting milk. In short, so many methods of treating asthma have been described that no one principle of treatment is recognised, while new "cures" are constantly being advocated. The Asthma Council proposes to investigate the value of these various "cures" and to try to find some scientific basis for building up a rational form of treatment.

The relationship between asthma and certain allied conditions, such as hay-fever and migraine, deserve the promised attention particularly, for, as the cause of asthma in the particular condition was discovered we should also have an explanation for diseases of other sorts. From all of this it will be seen that there is a large field for investigation open to the Council. Our present knowledge of asthma and the many problems associated with it is confused. There is a large quantity of material awaiting investigation, for asthma is a very common condition in its numerous different manifestations. Organised research may yield very helpful results. Those suffering from asthma, to whose attention the movement for self-help will now be brought, can assist by taking an active interest in the movement financially and otherwise, while helping with much of the research that does not require special medical knowledge.

PHYSIOLOGICAL CHOLAGOGUES.

THE hypothesis that there is an entero-hepatic circulation of bile—i.e., that a portion of the bile is absorbed from the intestine and on reaching the liver in the portal vein supplies the material for a further secretion of bile—was suggested in 1868 by M. Schiff, as a result of his experiments on dogs by what he called his "amphibolic" fistula. A large fistulous opening was made between the gall-bladder and the surface of the abdomen without ligature of the common bile-duct, and it was found that the bile flowed externally, unless the cannula in the fistula was closed, in which case it passed into the intestine. The quantity of bile obtained in a given period was always much greater immediately after the bile had been allowed to flow into the intestine than when it was allowed to flow externally. It was also noted that the introduction of bile-salts through a fistula in the duodenum increased the quantity of bile. Views on biliary secretion were profoundly changed however, in 1902, when Bayliss and Starling, by the intravenous injection of secretin free from bile-salts caused a copious secretion of pancreatic juice and doubled the flow of bile from the liver. In 1925 Mellanby [1] showed that bile of adequate reaction introduced into the duodenum of the cat caused a large secretion of pancreatic juice—sometimes lasting three hours—owing to secretin being carried by absorbed bile-salts into the portal vein. He has continued his researches in two sets of experiments chiefly on cats and on rats, which have no gall-bladder. To determine how secretin acts as a cholagogue experiments were made on the effects of intravenous injection of purified secretin, also on its possible destruction in the blood, and the effects of its repeated injection and the effect of clamping the pancreatic vein. Purified secretin acts as a cholagogue, as a secondary effect depending on its action on the pancreas. Secretin acts on the pancreas causing a secretion of pancreatic juice and as a result of this glandular activity metabolic products pass into the portal vein and are carried directly to the liver. These metabolic products from the pancreas excite the biliary activity of the liver and cause an increased secretion of bile. To test whether secretin is the immediate excitant of biliary secretion after injection of bile into the duodenum, acidified bile was injected into the ileum. Bile was rapidly secreted, but there was no flow of pancreatic juice which makes it evident that the liver can secrete bile into the duodenum quite independently of the absorption of secretin into the blood. The experiments show that injection of bile into the duodenum causes a large secretion of pancreatic juice and augments the secretion of bile; a similar injection of bile into the ileum or an intravenous injection of bile salts will augment the flow of bile, but has no effect on pancreatic secretion. The intravenous injection of purified secretin causes a large secretion of pancreatic juice and augments the flow of bile, but secretin's action as a cholagogue is annulled by procedures which prevent the secretion of pancreatic juice. To sum up, bile-salts, free of secretin and absorbed into the blood from the small intestine, act as cholagogues, whilst the action of secretin as a cholagogue is secondary to its action on the pancreas.

TRAVELLING EXPENSES AND INCOME-TAX.

AN editorial article in the *Journal of the American Medical Association* for Feb. 11th indicates that revenue authorities in the United States discriminate against the medical profession by not allowing the right to deduct in the computation of federal income tax travelling expenses incurred in attending the meetings of medical bodies. Other professional men and traders, it is suggested, are allowed to make this deduction. In England it is doubtful whether such travelling expenses would be a permissible deduction. The courts have refused to allow any deduction by a professional man for the cost of his annual subscriptions to professional organisations whereby he keeps himself abreast of the latest developments which affect his calling. No general deduction, it seems, can be made for the cost of equipping a professional library, essential though it may be to a practitioner; but it is possible that the cost of purchasing new editions of essential text-books could properly be deducted under the wear-and-tear provisions which a few years ago were extended from trades to professions. Rules 9 and 10 of the relevant schedule of the Income-tax Act do offer some prospect of deducting travelling expenses necessarily incurred in connexion with the

[1] Jour. of Physiol., 1925, lx., 25; see THE LANCET, 1926, i., 920, and ii., 215.

[2] Journal of Physiology, Feb. 10th, 1923.

lding of an office and employment; but their olication has not been very liberally interpreted. has been held that the expenses incurred by a rgyman in travelling from one curacy to another re inadmissible as a deduction, but that he might luct the cost of visiting his congregation and ending meetings. It was long ago decided that a npany director could make no deduction for the ense of travelling from his residence to his office. was also decided that a solicitor living at Worcester, o happened also to be clerk to the justices at an oining town to which he therefore had frequently travel, could not deduct the expenses of such travel. d, more recently, it was held that a London barrister o was Recorder of Winchester and therefore might e to travel to the latter place four times a year and stay at a hotel overnight on each occasion, could deduct his railway and hotel expenses. The idea s apparently that there was no reason why he should live in Winchester permanently instead of in ndon, in spite of the notorious fact that barristers he experience and standing to justify their selection recorderships do in fact practise their calling in ndon and must live there. A committee of experts ttempting the almost impossible feat of re-drafting income-tax laws in simple language. If so it may noped that the position of travelling expenses may made universally plain. The tax-payer at present riven more and more into the necessity of taking ert advice, and he wonders whether the same ndards of relief or otherwise are applied as between district and another.

STIMULUS IN ECONOMIC LIFE.

THE interrelationship of the sciences has reached n a degree of intensity to-day that it behoves stigators in each field to pause from time to time xamine their categories in order to judge to what nt they have been borrowing concepts which not, in our present state of knowledge, allow for a ersal application. In the mathematical sciences concepts used appear to be of such absolute dity within a given universe of discourse that to stion their validity would merely result in the tion of new concepts to regroup the same facts. epting, for example, the Euclidean notion of ce, or the Kantian intuitions of Space and Time, can arrange phenomena so systematically that ntific prophecy becomes possible over a very wide ge. When, however, discrepancies are discovered he confirmity of phenomena to accepted laws, a orientation is necessary. This we see in the tivistic modification of Newton's laws. In ology, or, more broadly, in the biological study of organism as a system of responses to environtal conditions, the concept of stimulus-response been of inestimable value in describing processes even of numerically relating them, as in Weber's Fechner's Laws. In his Rede Lecture, delivered year and now reprinted,[1] Sir Josiah Stamp wed how the term Stimulus has been repeatedly ked to explain phenomena in the social sciences—icularly in economics. Realising the difficulty of ying so simple and abstract a concept as Stimulus his particular study, the author distinguishes it n incentive and enlargement of scope, and tends efine Stimulus as the increment in incentive which t be distinguished from a mere "shake," which s the opportunity or the occasion for the "realisaof a scope that is already existent." Furthermore, dds that we must distinguish those stimuli which ly act as "detonators or catalysts" from such emical stimuli" as fertilisers which, actually, 'real additions to the other agents." Sir Josiah ores all the avenues of approach, such as types of ulus in economics, which give full permanent s, and those which result in partial gains, status returns and full or permanent losses. He exposes fallacies in the application of the terms to drugs, fertilisers, metal stresses, and economic psychology. In studying his lecture, however, the psychologist may feel a regret that the subject of stimulus and response has not been dealt with from the point of view of dynamic and structure psychology. At the social level of psychology it is surely the whole-felt situation which is met by a highly systematised and dynamic set of purposes or interests (which we call the organism that must be considered, and not the hypothetical units out of which the systems are made. It is doubtful whether in our present state of knowledge it is possible to construct for social phenomena a calculus of increments to explain economic response. Jevons attempted this in his calculus of pleasure and pain. Marshall introduced mathematical graphic methods in his Principles. Recent French work on chronaxie has led to the discovery that within the nervous system Weber's law of psychophysical parallelism holds true. But, with the myriad affective disturbances which qualify group and individual activities, over-simplification and analysis may erect an imposing scaffold which hides the edifice.

[1] Cambridge University Press. Pp. 68. 3s.

AN AMERICAN MEDICAL STUDENT IN 1790.

THE hardships attendant upon practice in country districts has often been a theme for letters and articles appearing in the medical press. Those hardships are real, but the diary of Dr. Eaton, dealing with the conditions existing in New England 130 years ago, makes some of them look very slight.[1] The absence of means of communication, the lack of the necessaries of life, and the primitive methods of practice disclosed in the diary are, of course, long since gone, but it is well to have brought to our knowledge the hard conditions of those far-off days.

The young Thomas Eaton first "talked with his father about going to study physick next summer" on Dec. 2nd, 1791, and was advised to "go by all means." On Jan. 16th, when he was "teaching school, Dr. Butler made me an offer that if I would come and study physick with him, he would take me for 100 dollars (and keep my horse) the whole time for two years, and then if I had a mind to go and ride with Dr. Hassleton a few months he would find me or settle with the doctor. I concluded to give him an answer sometime in the Spring." On March 1st we read that he concluded a bargain with "Doctr. Butler: viz., That I shall live with him two years and as much longer as I please, except I have a mind to spend a few months with Doctr. Hassleton at the last of my time, and if so he is to find me there and my horse at his own cost. He is to board me and my horse and do my washing, &c., and is to have the privelege to ride my horse half enough to pay for the keeping. The first year he is to find all necessary books (except I have a mind to carry a dictionary or two) and am to pay him 30 pounds in cash or stock at cash price, but on the account of his other apprentices it is to be called 40 pounds besides pay for my horse's keeping and if I have a mind to come away any time I have my liberty with paying for the time I am there in proportion to 30 pounds for two years." On the 6th he "sent my snuff-coloured coat, 3 waistcoats, 3 shirts, 2 handkerchiefs, 1 pair of breeches, 2 pairs of stockings, by Doctr. Butler's orders to his house," and must soon have followed his wardrobe for on April 18th he "read 136 pages in Chesleton's Anatomy and got through the second time," only to begin for the third time on the following day. He finished it for the fourth time on May 13th, but never seems to have mastered the spelling of the great surgeon's name, of which he gives another variant later. Anatomy seems to have come no more easily in the eighteenth century than it does to-day! Sunday the 22nd marked his baptism as a surgical dresser, for he "Bled John Marshall, he being the first person that ever I bled." By the 24th

[1] Medical Practice in New England in 1792. Being extracts from the diary of Dr. Thomas Eaton, 1789–1798, and published in the Boston Medical and Surgical Journal for March, 1927, by George Van Ness Dearborn, M.D., Ph.D.

he was a clinical clerk, for he "gathered some snake root." He was no unworthy follower of the great experimenters, for we read that he both bled himself and put a seton into his own leg. The casualty officer will note with a fellow feeling the entry for July 17th: "Pulled a tooth for Joseph Eaton; broke one for John Marshall." By September he had left anatomy behind h m and was "getting through" Sydenham and Boerhaave, Freind's "Emmenologia," Husham "On Fever," and Richard Brookes's "Practice."

An interesting part of the diary is the account given by Dr. Eaton of his visit to the "Pest House" in the following March for the purpose of being inoculated with small-pox. Preparations began on the 21st, when he "swapt stockings with the doctor. Got a pair of linen ones to have to wear to have the small-pox." On the 26th he "rode to the Dr. Jefferies's pest-house in Orange. Inoculated, by his son, Gideon, with the point of the lancet infested, and pierced my wrist very slightly, so that it could not be seen for two or three days after. Agreed to give him 2 pounds for inoculating me and carrying me through the small-pox and he find me in everything." The doctor "would not allow us to eat anything salt, greasy, or sour, but ordered our diet to be skim milk, hasty pudding, and milk porridge. Physic every other morning for three or four days with jalap, &c., and antimony or the essence of antimony so as to work a few times up and down, especially if the stomach be foul; then no more physick at all after the eighth day from the inoculation." Two brief but moving entries record: "Friday, 29th: Took physick. It worked up and down a number of times on each of our company. Sunday, 31st: Took physick again; operated as before." On April 6th his "symptoms held tight. I kept stirring as brisk as possible and feel miserable. My head felt very large and sore and in pain all over. Lost my appetite. I stood it till about sunset, then grew sick at my stomach and a violent pain in my left side. Concluded to bleed myself and go to bed, which eased my pain." That one of the party of five succumbed to the disease given seems not to be a matter calling for much comment by Dr. Eaton, for he merely mentions the fact that he took the disease in a serious form and died; "and a bright young man was he, by name Tristam Coffin, of Epping." All through the year the diary records an alternation of reading—"Chessleton" again in July, Cullen's Nosology and Practice, David Spence's Midwifery, and Samuel Sharp's Surgery—with riding out to bleed, insert setons and prescribe various mixtures and drugs. In July he left Dr. Butler and worked with Dr. Grosvenor. On Oct. 7th he had an attack of influenza "which began with a pain in the breast." The extracts conclude with the proper "happy ending" in 1797, when on Nov. 2nd he "made a request to the parents of Betsy for her to become my wife." On Jan. 3rd they "concluded to be published" and on the 6th "ordered Mr. Greeley to publish me to-morrow." Not even the excitements of a wedding day could abate the young Thomas's ardour for accounts: "Married by Reverend Moses Bradford, for which I reward him with 2 dollars." Gowned in a pink satin pelisse, the 16-year-old Betsy Eaton rode home with her husband on a white horse, and they lived happily ever after.

A MEDICAL MILLENNIUM.

Mr. J. G. Legge is anxious to save the English people from its medical friends, and his amusing book [1] on bureaucracy in public health will be read with interest by those who believe, as he does, that the attempt is still worth making. The scene of his story is laid in England in the period immediately following the war, when everyone was trying to build a New Jerusalem or at the very least Homes for Heroes—the so-called Period of Reconstruction. It opens with the launching of a Ministry of Hygiene which has three main planks in its platform—a housing scheme plan for improving the weather by bringing artific sunlight to the masses, and a proposal to enfo health on the population by such measures as co pulsory periodical examinations, compulsory notifi tion of all diseases, and the establishment of a sanit police force and courts of hygiene. The execution this policy involves a good deal of wire-pulling a intrigue, and these, together with the measures tal to influence public opinion, are described with a de that suggests inside knowledge of political l Parliamentary opposition to the clause of the which establishes the sanitary police and machin for registration eventually prove so great that Prime Minister (who makes dramatic appearances England in the intervals of attending conferences foreign spas) decides not to enforce the meas throughout the country, but to allow local authori to adopt it if they wish. The rest of the book d with the scheme's application at "Rushington," progressive town in the North Midlands, under leadership of its enthusiastic but rather ingenu medical officer of health, Dr. Jollop. At first inhabitants of Rushington rather enjoyed being t by charming young ladies in sky-blue uniforms, exchange their unhygienic headgear for the r sanitary hat, but when they found that the laws to be taken seriously, when doctors were fined sleeping with their windows shut and aldermen w forcibly dieted for their corpulence, there was no of a row. Finally, after the intervention of a climb and treacherous ex-member of the city council financial screw was applied by the Ministry of Hygi itself and the scheme was withdrawn. The m of this book is contained in the quotation fr "Erewhon" placed at the beginning. "Happ common sense, though she is by nature the gent creature living, when she feels the knife at her thr is apt to develop unexpected powers of resistance, to send doctrinaires flying, even when they have bo her down and think they have her at their mercy.

[1] The Millennium. By J. G. Legge. Oxford: Basil Blackwell. Pp. 164. 5s.

LIVER EXTRACT IN PERNICIOUS ANÆMIA

WE published last week a preliminary report the Medical Research Council upon the use of li extract in the treatment of pernicious anæ Numerous requests having been received by Council for particulars of the method of prepa the extract, it has been thought desirable to pub the details of the process by which the material prepared for the trial organised by the Cou The method is as follows:—

To 100 kg. minced fresh ox-liver add 132 litres of 80 cent. alcohol and 109 c.c. of 50 per cent. (vol.) H_2SO_4. frequently and filter after 12–18 hours. Suspend the ti again in 250 litres of 50 per cent. alcohol, stir frequently filter after 12–18 hours. Evaporate the combined filtr *in vacuo* to a volume of about 10 litres. Add 10 litre absolute alcohol. A flocculent precipitate is formed w settles. The supernatant fluid is removed and the resi is centrifuged and washed with 50 per cent. alcohol. alcoholic liquid and washings are combined, evapor *in vacuo* to as small a volume as possible and then pou with constant stirring, into ten volumes of absolute alco The syrupy liquid is slowly dehydrated by the alcohol assumes a toffee-like consistency. This material is pu into long shreds to expose fresh surfaces to the dehydra action of the alcohol. When the dehydrating action of alcohol is exhausted it is replaced by fresh alcohol and material is broken up and eventually becomes brittle. is then filtered off and dried (*in vacuo* over H_2SO_4, or other suitable means). It is then powdered rapidly again dried as before. The material must be exposed the air during these operations as little as possible, as very hygroscopic. The dry powder is transferred to tu each of which should contain an amount equivalent 250 g. of the original fresh liver.

It is to be noted that the method here describe based upon the American process of which an acco has been published by Cohn and his co-work As was stated in the Council's report, this particu modification has not necessarily any peculiar va as compared either with the original process or w

ossible alternatives, but the experiments made for ie Council have shown that it is one which is capable f ready application on a large scale, and which, ccording to the clinical indications, yields a satis- ctory product.

THE GROWTH OF POPULATIONS.

THOUGH it is difficult to wrench the mind to a full ealisation of the implications of the prospect, there eems to be very little doubt that the population of his country will become stationary in another 20 ears or so unless some revolutionary change in our elation to our environment intervenes. Experts who udy the question all come to the same conclusion. rof. A. L. Bowley takes the facts of death-rates and irth-rates in relation to the age-distribution of the opulation as they stand, and predicts the rapid attain- ient of a population in which births and deaths will just bout balance one another. Prof. Raymond Pearl aches the same conclusion on broader biological lines, id publishes in the last number of his *Quarterly Review Biology* [1] a revised version of a paper [2] which he ad at the World Population Congress at Geneva st year when, as some of our readers may remember, e also lectured on the subject in London. He finds at populations of all kinds—bacteria, yeast, the y *Drosophila*, and man—follow the same curve of owth, increasing slowly at first, then faster and ster (as we did in the first two-thirds of the nine- enth century), and then gradually slowing off until ie rate of increase becomes imperceptible. His iagrams certainly show a remarkable similarity which akes it easy to believe that the same explanation ust underlie the whole of them. He points out at this uniform type of curve is derived from eath-rates and birth-rates if it is postulated (1) that rth-rates are much diminished by small increases density of population when the density is thin, and latively little afterwards when the density becomes eater; and (2) that death-rates are not much creased by increasing density of population until ie density becomes considerable. Experiments with rosophila show these relations between births, eaths, and density, which between them account dequately for the facts observed in the growth of xperimental populations, and the similarity of the ain phenomena with those observed in man makes at least possible that the same factors are important r human populations too. "High" and "low" ensities of population cannot, of course, be defined umerically; they differ very widely in different ecies and, in the same species, depend on the vironment. Like other animals, man adjusts his ensity to his surroundings and tends to have the rgest population which is compatible with the mfort and convenience which he judges to be the ecessary minimum; the abundance of a plant opulation depends chiefly on the room available, of ats on the food-supply, and of man on the same and milar considerations; the density in 1900 in this untry would have been impossible overcrowding 1600. The prospect of a stationary population cause for neither glee nor apprehension; if man is llowing a general biological law, it is inevitable and resumably good for him.

CAROTINÆMIA.

IN a recent paper on this subject Dr. Willard C. toner,[3] of St. Luke's Hospital, Cleveland, who escribes a case of his own, remarks that after the ar German authors described under the name of arotinæmia a number of cases with a peculiar iscoloration of the skin which was obviously due the high vegetable diet of the population.[4] The condition was most often seen in children who had been having exclusively vegetable diets rich in carrots and greens. The chief interest of the condition, which is unaccompanied by any symptom of constitutional disturbance, lies in the fact that it may be confused with true jaundice, the principal difference being the absence of pigmentation of the sclerotics of patients with carotinæmia. The cutaneous discoloration is due to "lipochromes" which are found in substances such as milk fat, yolk of egg, body fat, and certain vegetables such as carrots, green vegetables, and oranges. Their excretion sometimes alters the colour of the urine. Dr. Stoner's case is unusual in that it occurred in an adult, a woman aged 65, who had been living almost exclusively on a diet of vegetables, including carrots, for several months. The skin showed a slight generalised yellowish pigmentation, which was most intense on the palms and soles. There was no pruritus—a symptom which is usual in jaundice—and the sclerotics were not discoloured. The temperature was normal, and apart from flatulence and constipation, which had been present for years, no other symptoms were noted. Examination of the urine was negative, but appropriate tests showed carotin in the blood. What finally happened to the patient is not reported, but presumably, as in other cases on record, the discoloration of the skin disappeared when the diet was changed.

[1] Vol. ii., p. 532. English agents: Messrs. Baillière, Tindall and Cox. [2] THE LANCET, 1927, ii., 726.
[3] American Journal of the Medical Sciences. January, 1928.
[4] See also THE LANCET, 1920, i., 106.

WHAT IS CELL RESEARCH?

UNDER this title our Budapest Correspondent sends an account (p. 572) of a lecture by Prof. Michael Lenhossék, in which attention is again drawn to the revival of interest in normal and pathological histology. For those who could see a little deeper than the crest of the wave, these subjects never have been dead, they must always be the basis of our knowledge of the structure of the normal and the abnormal. But the study of histology is tedious and difficult; results demand great industry, and are much more easy to obtain in other fields. Though accepting the dictum that function is dependent on structure, both physiologists and pathologists have tended to explore other paths in their search for the truth. It is, and has been, very necessary that they should do so, but it is a matter for general congratulation that interest has become focused once more on what are, after all, basic studies. This happy result is entirely due to the adoption of the experimental method. By vital staining methods, and by micro-dissection and manipulation, it has become possible to learn more about the structure and behaviour of the living cell than could be hoped for by the study of fixed and stained material alone. Probably the most important technique of all is that of tissue culture. The possibility, first shown by Ross Harrison some 20 years ago, of growing cells outside the body, just as bacteria are grown, has opened up lines of investigation of great promise. For the most part this method has been used by pathologists, and for the investigation of cancer. But it should have a much wider field. The substitution of artificial media for the fluids of the body has made the technique of tissue culture easier than it was, but it is still much too difficult for universal application. If and when it becomes simplified it should be feasible to study the growth and structure of the living cell in a way which is at present impossible; and by using the growing cells as indicators of the nature of the medium on which they are growing, to investigate those problems of metabolism and environment which now elude us. It would be unwise, however, to draw inferences too readily from the behaviour of cells in vitro, for the cells of the tissue culture approximate closely to unicellular organisms, and it would be just as fallacious to seek the answer to the questions of human physiology from the behaviour of the amœba as to expect the tissue culture to be entirely representative of the body tissues. While welcoming these new means of

investigation, it should not be forgotten that the experimental method can be applied with benefit to the older techniques—and inasmuch as the whole basis of the experimental method is adequate control, the workers in the more dynamic forms of histology must always be prepared to check their results by resort to the older techniques.

THE DISCOVERY OF ETHER ANÆSTHESIA.

THE granting of official rewards for scientific discoveries is always attended with the difficulty of distinguishing between the claims of rival discoverers, for the ground may be prepared by unrecognised workers, and the actual reaping is inevitable. The recognition of the truth may be delayed perhaps, but sooner or later it must be perceived, and it is hard to say whether he who enunciates it is more worthy of recognition than those who made his discovery possible. There seems to be no doubt that Crawford W. Long performed on March 30th, 1842, the first operation to be carried out under ether anæsthesia, and it is exceedingly interesting to learn how this came about.[1] It appears that in the first half of the nineteenth century certain individuals used to travel about England and the United States lecturing on chemistry. During these lectures it was the custom to invite members of the audience on to the stage to inhale laughing gas and ether vapour for the purpose of causing exhilaration and mirth-provoking antics. The inhalation of ether to produce excitement and exhilaration became quite popular. Dr. Long introduced it to his circle, and it is amazing to us to read that he and his friends used to indulge in "ether frolics." Long noticed that he and others sustained bruises and minor injuries while under the influence of ether without any consciousness of pain, and it occurred to him that he had at his command a means of obviating the terror of a surgical operation. And so from what we should regard as a highly reprehensible practice came the wonderful discovery of ether anæsthesia. Mrs. Frances Long Taylor, with the intent to establish her father's claim to be the discoverer of ether anæsthesia, has drawn the picture of a fine and distinguished man.

THE Lumleian lectures will be delivered at the Royal College of Physicians of London, Pall Mall East, S.W., on March 22nd, 27th, and 29th, at 5 P.M., by Dr. James Collier. His subject will be Epilepsy, and members of the medical profession will be admitted on presentation of a visiting-card.

[1] Crawford W. Long and the Discovery of Ether Anæsthesia. By Frances Long Taylor. New York: Paul B. Hoeber. 1928. Pp. 237. $4.

EASTER TUBERCULOSIS CONFERENCE.—A provincial meeting of the Tuberculosis Society and of the Society of Superintendents of Tuberculosis Institutions will be held at Oxford from March 29th to 31st, and the Conference will deal in successive sessions with four subjects—Lupus and its Treatment; speakers, Sir StClair Thomson, Dr. W. J. O'Donovan. The Potentially Tuberculous Child; speakers, Dr. A. L. Ormerod, Dr. G. Macdonald, Dr. Esther Carling. Treatment of Hæmoptysis in Pulmonary Tuberculosis; speaker, Dr. Clive Riviere. Intestinal Tuberculosis; speakers, Prof. M. J. Stewart, Mr. L. E. Barrington-Ward, Dr. Marcus Paterson. The Chairmen at successive sessions will be Sir Farquhar Buzzard, Sir StClair Thomson, Prof. Lyle Cummins, Dr. F. R. Walters. The meetings will be held in the pathological lecture theatre at the Dunn Laboratory. The annual meetings of both Societies will take place at the Clarendon Hotel on the evening of the 29th, and on the following evening there will be a dinner to entertain visitors. Accommodation can be arranged at the Clarendon Hotel, for any who wish to avail themselves of it, on application to Dr. G. T. Hebert, Tuberculosis Department, St. Thomas's Hospital, London, S.E. 1.

Modern Technique in Treatmen

A Series of Special Articles, contributed by invitatio on the Treatment of Medical and Surgical Conditio

CCLXVII.

THE TREATMENT OF HEAD INJURIES.

I. GENERAL MANAGEMENT.*

THE treatment of head injuries causes more anxie than almost any other emergency of practice, and the early stages prognosis is quite uncertain. Ea case differs from the last in the manner of its evolutio and successful management depends on close a continuous observation of the signs during the peri of danger, and on a clear understanding of the ma pathological processes that may be set in train.

Emergency Treatment.

We are called, let us say, to treat a head inju shortly after the accident has occurred. The unco scious patient has been removed to the nearest shelt A hasty examination is made to answer the followi questions: (1) Is the patient collapsed? (2) Is the bleeding from the scalp? (3) Are there any fractur of the limbs? At this stage the patient is interfer with as little as possible, and if he shows signs collapse it may be necessary to delay his removal hospital for an hour or so, until his pulse has rallie Stimulants are to be avoided; the state of concussi is one which tends towards spontaneous recovery, a any artificial stimulation of the blood pressure is like to increase the risk of subsequent intracrani hæmorrhage. Cases which at this stage are showi signs of increasing collapse are inevitably fatal.

The patient is kept warm and is placed in such position that his breathing is free. Bleeding from lacerated scalp can be easily controlled by digit compression of the scalp against the intact part of t skull on each side of the laceration, if necessary considerable distance from the wound itself. This a matter which can be delegated to lay assistants aft slight tuition. Tourniquets for the scalp are le satisfactory than pressure by the fingers, for they a apt to slip.

It is of great importance that the patient should removed to a hospital or nursing home rather tha to his own house. It is impossible to foretell at th stage whether an operation will later be require Moreover, in hospital it is more easy to make t systematic observations that are necessary for t successful management of each case, and to enfor the prolonged rest in bed on which complete a permanent recovery so often depends.

Systematic Observations.

Apart from the care of open wounds of the hea which will be considered later, the treatment of patient who is suffering from a recent head injury at first essentially conservative. He is placed in warm bed in a room free from noise, and the followi observations are made:—

(1) The state of consciousness. If the patient is unco scious the depth of coma should be investigated by notin the pupillary and corneal reflexes, the response to pin-pric the flaccidity of the limbs and so forth.

(2) The state of the pulse, temperature, respiration, a blood pressure.

(3) The size and reaction of the pupils.

(4) The sensation and, if possible, the movements of t limbs and face.

These observations should be made every hour, a the facts noted should be committed to paper at t time.

It is well to remember that an unconscious patie bearing the marks of a head injury is not necessari suffering from the effects of head injury. In hospit practice, especially, a number of other conditio frequently masquerade as head injury—notab

* A second part will be published next week.

rebral hæmorrhage, ruptured cerebral aneurysm, rebral thrombosis, and acute alcoholism. Moreover, e irritability of a patient with severe traumatic tracranial hæmorrhage may closely simulate that of ute alcoholism. For the differentiation of these nditions lumbar puncture is of definite value. Blood rarely absent from the cerebro-spinal fluid in severe tracranial trauma.

Though fractures of the skull are often absent and ways relatively unimportant in head injuries, and ough their discovery may even be confusing if it is t borne in mind that the greatest damage of the ain is apt to be, as a result of contre coup, on the posite side of the head, it is nevertheless advisable at skiagrams of the skull should be taken. casionally they give information which is of immeate value, but their chief importance is medico-legal. ray examination is best made as soon as the tient is admitted to hospital and before he is put bed, as undue movement is in this way avoided.

The Classification of Cases.

During the period of observation it is necessary to ake some estimate of the type of case being dealt th, in order that a rational line of treatment may be rsued. It will be found that each case can be signed to one or other of the following groups.

(*a*) *Fatal Cases.*—In some cases deep coma is aintained from the moment of injury; while the spiration grows more stertorous, the pupils become lated and inactive, and the blood pressure and mperature mount rapidly. These signs indicate a eatly raised intracranial pressure, due to damage of e vital centres that we are powerless to repair. ch cases are invariably fatal. Operation, it should emphasised, is of no avail in this type of case.

(*b*) *Mild Cases.*—In other cases it soon becomes ident that recovery is taking place. The initial consciousness is of short duration and is followed a stage of reaction, in which the patient is apt to extremely irritable and liable to sudden attacks of miting. There is severe headache. These are cases mild concussion and contusion, and they are treated nservatively by methods to be described later.

(*c*) *Doubtful Cases.*—There is another group of ses in which the issue remains for some time in ubt. For a day or more the patient remains uncon-ous, or shows periods of semi-consciousness alterting with periods of actual coma. These are cases severe contusion and laceration of the brain with condary œdema. There is a moderately severe and stained rise of intracranial pressure. Treatment is ried out on conservative lines, unless there are rsistent focal signs to indicate an area of local ntusion for which operative decompression will be value.

Other doubtful cases are those which show what is own as the "lucid interval." The patient recovers rtially or completely from the unconsciousness of ncussion, but, after a lucid interval of variable ration, lapses once more into coma. In this tegory also are those cases in which the patient is ly dazed at the moment of injury and is able to lk up to hospital, but then becomes unconscious. e lucid interval is an indication that the compression, rise of intracranial pressure, which produces the ondary state of unconsciousness, is due to gradually cumulating intracranial hæmorrhage, such as morrhage from the middle meningeal artery, or to a dually developing cerebral œdema, rather than to ual damage to the brain at the time of the injury. is not always easy to know, after a patient has overed from the initial unconsciousness of concusn, whether he is merely drowsy or whether he is ssing into the coma of compression. Here we are ided by our systematic observations; the onset of mpression is associated with slowing of the pulse, e of temperature, and, most important of all, with rise of blood pressure.

Those which show the lucid interval call for operan more than any other cases of head injury, with e exception of those in which there are compound fractures of the vault of the skull. Conservative treatment may be tried for a short time if the rise of intracranial pressure is not rapid, but should be immediately abandoned for operative treatment if it meets with no success.

Prevention of Infection.

While an attempt is being made to ascertain the extent of injury to the brain the spread of infection to the brain through open wounds must be prevented. Compound fractures of the vault of the skull call for immediate operative treatment, in a manner to be described. A leakage of blood or cerebro-spinal fluid from the nose or ears is presumptive evidence of an open wound through fracture of the base of the skull. In such cases also there is risk of meningitis. The external ear should be gently swabbed out—*never syringed*—with a mild antiseptic, such as perchloride of mercury 1/1000, and the auditory canal should be lightly plugged with a pledget of gauze, soaked in similar solution, which is changed every hour. For a leak of blood and cerebro-spinal fluid through the nose all that can be done is to keep the anterior nares free from clot. Urotropine, grs. x. t.d.s., should be given by mouth whenever meningitis is feared.

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Special Articles.

NATIONAL HEALTH INSURANCE.

A BILL TO SUPPLEMENT THE ACTS OF 1924 AND 1926.

THE National Health Insurance Bill just presented to Parliament is of interest to the medical profession for its omissions rather than for what it contains. The official memorandum, explanatory of the Bill, which has been issued as a Command paper,[1] states that the Bill—containing 22 clauses and two schedules of some length—is based mainly on the Majority Report of the Royal Commission. It will be found on examination of the contents of the Bill that this does not mean that the Bill gives effect to the main recommendations of the Commission, at least so far as the medical service for the insured is concerned.

Its Scope and Limitations.

It has already been stated in Parliament that the Government do not propose to accept the recommendations of the Royal Commission as to the abolition of insurance committees or as to the partial pooling of the surpluses of approved societies. The Bill accordingly contains nothing on these subjects. The fresh lease of life for insurance committees is of interest as a further illustration of the vigour of those bodies whose existence is threatened from time to time. The absence of any provision for the partial pooling of the surpluses of approved societies is disappointing for those who had hoped for a much-needed improvement of the medical service for the insured. For it was by such means that the proposed extensions of this service were, in the view of the Royal Commission, to be financed. It may be recalled by those who studied the report of that body early in 1926[2] that the Commission placed their recommendations in regard to extensions and improvements in the insurance service in order of priority, and gave first place to the widening of the scope of medical benefit so as to include the provision of (*a*) expert medical advice and treatment for persons who can travel to meet the specialist; (*b*) expert advice for persons who are unable to travel; and (*c*) laboratory services. We stated at the time that—

this recommendation has very properly been given priority as the medical benefit under the Act has suffered throughout

[1] Cmd. 3051. H.M. Stationery Office. 3*d*.
[2] See THE LANCET, 1926, i., 501, 515, and 676.

from limitations imposed by financial considerations, and stated by the Commission to call urgently for removal. It would seem that, owing to the fact that sickness has cost less than was originally anticipated, there is a margin available out of the present contributions, and the Commission expressly recommends that this margin should be applied to its full extent towards meeting the cost of extending the statutory benefits. The medical profession, as made clear by their evidence, are ready to coöperate with the Government in bringing into operation the extension of the scope of medical benefit which is contemplated.

The greater part of the "margin" was shortly afterwards employed to bring about a reduction in the Exchequer contribution towards the cost of benefits generally, and the proposal that remained—that one-half of the future surpluses of approved societies should be used to find the money for a general extension of the medical service, estimated to cost a million and a half pounds per annum—now finds no place in the Bill which is based on the Commission's report.

Inequalities of Benefit.

With regard to the value of the medical service for the insured, the Commission reported that the general acceptance of the system during the 13 years since its introduction, the absence of any substantial volume of criticism of it apart from the question of scope already referred to, and the wide demand for its extension, were in themselves evidence of a favourable kind.

We must suppose that there are grounds, financial or otherwise, which commend themselves to the Minister of Health as adequate for the failure to give effect to any recommendation of the Royal Commission for extension of benefit, not even that placed first in order of priority. The system therefore continues by which those societies having surpluses apply the whole available surplus (that is, that part of the surplus declared on the quinquennial valuation to be available for the purpose) to certain statutory "additional benefits." It is worth recalling what the Commission had to say in regard to the resultant inequalities of benefit.

> We received much evidence in criticism of the inequalities of benefit which result from the variations between the valuation surpluses of approved societies and of the confusion alleged to be consequent on the comparative freedom which societies enjoy in selecting and, indeed, in defining the content of additional benefits other than the increase in the rates of the cash benefits. . . . Other witnesses contended vigorously for the maintenance of the present system. . . . Some of those who advanced this claim relied on pledges given when the Bill of 1911 was before Parliament, to the effect that, to meet this difficulty, insured persons should be free to choose their own societies and the societies should have full control of their own surpluses. In this particular sphere, indeed, it became evident that we had to recognise the existence of opposed and apparently irreconcilable opinions held in each case by schools of thought whose views were entitled to respect and consideration.

List of Additional Benefits.

The complete list of "additional benefits" appears in the new Bill in substitution of existing lists, and is as follows:—

1. An increase of sickness benefit and disablement benefit.
2. The payment of sickness benefit from the first day of incapacity.
3. An increase of maternity benefit.
4. Allowances to a member during convalescence from some disease or disablement.
5. Payments to or on behalf of members who are in want or distress.
6. Payments to members not allowed to attend work on account of infection.
7. Repayment of the whole or any part of contributions payable under this Act by members of the society or any class thereof.
8. The payment of the whole or any part of the cost of the provision of dental treatment.
11. The provision of premises suitable for convalescent homes and the maintenance of such homes.

* * *

9. Payments to hospitals in respect of the maintenance and treatment therein of members, and the payment of the whole or any part of the travelling expenses incurred by in respect of members in travelling to and from hospitals
10. The payment of the whole or any part of the c of maintenance and treatment of members in convalesc homes, and the payment of the whole or any part of t travelling expenses incurred by or in respect of memb in travelling to and from convalescent homes.
12. The payment of the whole or any part of the cost medical and surgical appliances, other than dental a optical appliances and those provided as part of medi benefit.
13. The payment of the whole or any part of the c of the provision of ophthalmic treatment (other than provided as part of medical benefit) and the whole or a part of the cost of optical appliances.
14. The payment of the whole or any part of the c of the provision of nurses for members.
15. Payments to approved charitable institutions respect of any treatment of members required for the p vention or cure of disease, not being treatment within t scope of any other additional benefit or of medical benefit.
16. Such other additional benefits, being of a charac similar to that of any of those hereinbefore mention as may be prescribed.

New and Old Benefits.

This list is of interest to doctors, who are frequent asked by their patients about these addition benefits. They can merely refer the inquirers to the respective societies who, where there is an availab surplus, may provide one or more of these benefit All that the doctor can say with reasonable certain is that any form of benefit not in the list cannot obtained under the Insurance Acts. For instanc the proposed extension of medical services to whi we have referred does not appear in the list. It subject to the same objection as that which h now disappeared from the list, but which was alway and would have remained, a "dead letter"—t provision of medical treatment for the dependan of an insured person. In recommending its remov from the list, the Royal Commission said that extension of the scope of medical benefit should n be made in this way (that is, in certain cases and n in others), and that it was in fact impracticable, it would have to be administered by the insuran committee responsible for the administration medical benefit and not by the society having a surpl which it proposed to devote to this purpose. (It w be borne in mind that one society may have membe spread throughout the country in a large number insurance committee areas.) The extension of medic benefit to dependants of insured persons general was out of the question because of its great cost.

In the above list we have transposed item 11 so as show, below the line of asterisks, all those benefi which did not appear in the Act of 1924; some have be prescribed since that date by departmental regulatio others are new. It is important to observe wi regard to these generally that a long-standing que tion, as to whether certain forms of benefit appearin the list are or are not "in the nature of medic benefit," and therefore due to be administered l insurance committees, is settled by including s additional benefits in one class and making it cle that they are administered by approved societie A distinct gain in the control and standard of the various benefits is secured by the provision in th Bill that regulations may be made by the Minist in regard to them. The explanatory memorandu says that these regulations are required in order t secure that the large sums (approximately £4,000,0(a year) now spent by upwards of 7000 societies ar branches on additional benefits in the form of trea ment shall be administered with a proper standar of efficiency and uniformity, and in the best interes of the members.

The memorandum adds that if any of the forms treatment at present covered by additional benefi should at any future time be made generally availab to all insured persons as statutory benefits the administration would be transferred to the insuran committees on lines similar to those at prese governing the administration of medical benefit.

Other Provisions.

Amongst the other provisions of the Bill of general terest to practitioners may be noted—

the fact that all persons on ceasing to be employed are to remain fully insured for all benefits over an average period of one year and nine months (this period commencing, where the unemployment is due to sickness, after the sickness terminates);

a clause which prevents bodies of persons from contracting out of the medical benefit provisions of the Acts by taking advantage of a provision—intended for individuals making their "own arrangements"—to secure, in effect, the recognition of medical institutions which would otherwise be outside the Act;

a more careful regulation of the right of societies to subscribe to a "charitable institution" and a definition of such an institution which makes it clear that it must have a real and substantial charitable element and not be merely a body financed by approved societies and designed to give treatment beyond the control of the Minister of Health; and

a minor provision by which medical benefit includes, in addition to provision of medicines, such chemical reagents as may be prescribed; this will, for example, give the department the opportunity of regularising the use of Fehling's solution (which has been held to be not a "medicine") in connexion with the administration of insulin.

IODERN RADIOLOGICAL EQUIPMENT.

THE NEW DEPARTMENT AT EDINBURGH.

THE new Radiological Department at the Royal firmary, Edinburgh, is an outstanding sign of the portant position which radiology has reached at e present day. In the past, the visitor to an known hospital, desirous of finding the X ray partment, had only to descend to the cellars, in the rkest and most noisome corner of which the depart-ent would certainly be found. The idea that any ace is good enough for the radiologist is slowly ssing away, and in the future the X ray department an up-to-date hospital will be planned and built om the very beginning with a view to fitness for special work, as in the case of the Edinburgh partment.

General Arrangement.

The building, which was opened on Oct. 9th, 26, by the Duke of York, is 170 feet long, with an erage width of 60 feet. It consists of a basement d two floors, with a flat roof. It is built along the stern side of the curved passage between the rgical and medical blocks, known to all Edinburgh edicals as the "duodenum." The building is of el-framed construction with reinforced concrete ors and roof, and with walls of Craigmillar stone. is consequently fire- and sound-proof. One of the ost important factors in the design of rooms in which radiations of high penetration are to be generated the provision of adequate protection of the operators d the prevention of the escape of radiations which ight in time affect workers in adjacent rooms. In e past this second end has been achieved by lining e walls and doors with heavy sheet lead, but in a ilding of such size as this the cost would have en prohibitive. It was therefore decided to incor-rate the protection in the building material used r the construction of the walls. Concrete slabs of e following composition were used: rough sand, part; engine ashes, 2 parts; Portland cement, part; barium sulphate, 3 parts. The slabs were ngued and grooved, and when built the walls were ated on each side with a layer of barium plaster inch thick. The walls and ceilings were also coated ith this plaster. All screening, radiographic, and eatment rooms were thus protected. The National Physical Laboratory reported that the finished walls gave protection equivalent to 5 mm. thickness of metallic lead, when a peak voltage of 100 k.v. was applied to the tube. The doors are protected with 6 lb. lead on both sides. The radiographic and screening rooms are provided with protected cubicles, built with the same barium slabs, in which all controls are placed. The meters and patient are observed through windows glazed with two thicknesses of "Super Protex" lead glass, giving protection equal to 5 mm. of lead.

Further points of the greatest importance in the design of a radiological department are the avoidance of the noise of rotating machinery and of corona high-tension discharges, with the consequent pollution of the air of the rooms by ozone and oxides of nitrogen. In the Edinburgh department all rotating machinery has been placed in the basement, in one large machine room with thick rubber flooring.

The Electrical Installation.

Direct current at 460 volts, from the town mains, is brought into this room, and used to drive a motor generator of 42 k.w. capacity, which supplies alternating current at 200 v. 50 cycles to the whole department. There is also a 3 k.w. rotary convertor for use with an emergency set. A third 1 k.w. motor generator supplies D.C. at 80 volts for electrical treatment. The switch gear for both D.C. and A.C. sides of the main generator is grouped in the centre of the room, the wiring at the back being completely caged in. To avoid inconstancy of radiographic results, due to voltage changes resulting either from changes of load in the department or from line fluctuations in the town supply, a Tirrill automatic voltage regulator is used to control the output of the 42 k.w. motor generator. In practice this instrument is very satisfactory, the 200 volt A.C. supply being always perfectly steady. Three oil-immersed 10 k.v.a. high-tension transformers are installed in the machine room, each being directly under an X ray room on the floor above. The high-tension current is led up to the room above by aluminium tubing passing through glass insulators in the machine room ceiling. Each transformer is capable of an output of 100 m.a. at 150,000 volts (peak), and is controlled from a trolley table in the cubicle in the room above. Each transformer, with its mechanical rectifier and coolidge transformer is enclosed in a metal cage, on the door of which is a red danger sign, which lights up automatically when the main switch in the corresponding room above is closed, thus warning anyone below that the transformer is about to be energised.

These transformer units feed the two screening rooms and the main radiographic room. Next to the machine room is a mechanics' workshop, well equipped with electrically driven machine tools. There is also a very large fireproof room for filing films returned from the wards.

As a result of the grouping of the machinery in the basement there is no perceptible noise or vibration in the X ray rooms. When a screen room is in use, the only sound is a faint hum from the corresponding rectifier below. As all the high-tension wiring is carried out with smooth tubing, sharp bends being avoided, there is no corona in any of the rooms. Ventilation is carried out by a system of air extraction ducts at ceiling level, three high-speed electric extraction fans, for the different sections of the building, being installed in one roof tower, while fresh air inlets are provided at ground level. Practically all the rooms have wash-hand basins with hot and cold water, and all are floored with polished oak. In the corridors the floors and wall dado are of white terrazzo, with light blue decoration.

Radiographic Rooms.

An automatic push-button control passenger lift connects the basement with the floors above. On the first floor is the office at which patients are received, two radiographic rooms, dark rooms, director's room and secretary's room, deep and superficial therapy rooms. There are also a lecture or demonstration room and various staff rooms. The main radiographic room, fed from one of the transformer sets in the basement, contains a Bucky couch, ordinary couch for radiography, and a screening couch for localisation work. As all the controls, including an electro-magnetic remote control for the Bucky

diaphragm, are in the completely protected cubicle, the operator in this room is never exposed to X rays at all, as the tube can only be switched on from inside the cubicle. In the partition wall between the radiographic room and the dark room are two hatches with double lead doors. Through one of these fresh cassettes are obtained, while the exposed ones are passed in through the other. The two screening rooms are similar to each other, one being mainly intended for gastro-intestinal work, and the other for chest cases. Both have three section screening stands.

These consist of a large framework fixed to the floor and carrying the tube box. This, though very heavily protected with lead, can be moved with great ease in both horizontal and vertical planes. The section on which the patient stands, and the third one carrying the operator's seat, both run on rails allowing the patient to be moved away from the tube for tele-radiography. In front of the operator's seat is a counter-weighted, lead-protected, wooden screen with side wings, which normally rises and overlaps the lead glass protection of the fluorescent screen. It can be depressed temporarily to allow of palpation. This arrangement makes the wearing of a lead-rubber apron quite unnecessary. Each room also has a screening couch, with the fullest protection. One screening room has a Selecteur Béclère apparatus for rapid serial radiography of the duodenum, while the other has an apparatus with slot diaphragm and moving film for recording the movements of the heart. Both rooms are rapidly darkened by lowering a steel roller blind by means of gearing, but when not in use they can be thoroughly aired and exposed to daylight. Both have all controls inside the cubicle. All the high-tension wiring is carried out with aluminium tubing, supported by insulators fixed to the ceiling. Connexion to the various units is made by means of overhead H.T. switches, which instantly change over both H.T. and filament currents, without disconnecting any wires by hand. Both wiring and switches are entirely corona-less. Where the H.T. feeders enter the room through the floor, they are enclosed in a metal cage, to a height of 8 ft.

The large lecture room is equipped with viewing boxes, two stereoscopes, and a projection lantern.

Treatment Rooms.

Both deep and superficial therapy rooms open into a large operators' room, in which the workers are entirely protected from radiation by the barium walls and lead doors. The respective switchboards are at the side of lead glass windows through which the patients are watched.

In both rooms the high tension generators are the Gaiffe-Pilon constant current apparatus, which employs high-tension transformers, charging up large condensers through rectifying valves of the hot cathode type. The steady "overflow" from the charged condensers constitutes the high-tension supply to the X ray tubes. An oscillographic record of the current curve of this type of high-tension generator results in an almost straight line, which indicates that the voltage generated is almost constant, there being only a slight ripple. This means that the X ray beam emitted by the tube is practically homogeneous as regards wave-length. Moreover, the life of the tubes is prolonged as their anticathodes are not subjected to the rapid heating and cooling which occurs when a tube is energised by ordinary rectified A.C., and which causes a breaking up of the tungsten at the focal point. The high-voltage generator, which is placed in a safety cage inside the deep therapy room, is capable of an output of 10 m.a. at 250,000 volts. The hot cathode X ray tubes are immersed, for insulation and cooling, in oil which is contained in a metal tank. The oil is cooled by a radiator immersed in it through which cold water circulates. The tank is entirely surrounded by 6 mm. of lead, with the exception of the small aperture through which the X rays are emitted.

Patients may be treated singly, or two can be irradiated simultaneously, in which case the two tubes are used in parallel from the one generator. In this case both tubes have the same applied potential, but the milliampèrage through them is under independent control. A similar, but smaller, constant current generator with an output of 10 m.a. at 125,000 volts, supplies the superficial therapy room. A striking feature of both these high-tension generators is their silence and absolute steadiness when in operation. Once the kilovolt and milliampère meters have been set to the desired reading, they remain there without any fluctuation throughout any length of treatment. Notable characteristics of both therapy rooms are their great height, absence of corona, a excellent ventilation, all factors of the greatest impo ance if sickness after treatment is to be avoided. complete X ray unit, with transformer and combin couch and screening stand, is provided in the em gency room. This transformer can be supplied eit from the main motor generator or from a 3 k. rotary converter which, though situated in the ba ment, is controlled from the emergency room its This allows of the use of the equipment when t main generator is not running. Dental radiograp is also done in this room. The Victor dental set used, with a dental chair with full movements.

The dark rooms are also on this floor, and cons of the radiographic dark room, a second one f print and slide-making, and a large drying room.

Massage and Electrotherapeutic Department.

The first floor is occupied by the electrotherapeu department.

One large room is equipped as a gymnasium for remed exercises. Adjoining the gymnasium are the two la male and female massage rooms. Massage couches placed round the walls of the rooms, and above each cou is a wall type treatment board, fed from the 80 volt mo generator in the basement, from which both faradic a galvanic currents can be obtained. At intervals arou each room are patresses with four non-interchangeal plug sockets, to each of which is led a different suppl 230 volts D.C. from the town mains; 200 volts 50 cyc from the motor generator; 80 volts D.C. from the sm motor generator; and 4 volts D.C. from accumulato Each room also contains a Schnee bath.

There are, in addition, several small treatment roon Three diathermy machines are provided, and a high-frequen apparatus. Three rooms are used for ultra-violet lig therapy. Of these, two have carbon arcs, of which there two in each room. The arcs take 30 ampères, and each p is used in series on 230 volts D.C. The third room has t atmospheric mercury-vapour lamps. A hot and cold show bath is provided for patients.

The radium department, also on this floor, has waiting room, and a treatment room. A special saf with very heavy lead protection, is used for the stora of the radium. The treatment room is provided wi wash-basin, electric steriliser, &c.

There is also a photographic studio, for clinic photography, with a dark room next door.

The building was designed and its constructio supervised from the beginning by Dr. J. M. Woodbu Morison, medical officer in charge of the departmen and Mr. T. W. Turnbull, A.M.I.Struct.E., Master Works, Royal Infirmary, Edinburgh. All the electr wiring and plumbing was carried out by the pe manent staff of the infirmary. The entire X ray a electrotherapeutic equipment was supplied a installed by Messrs. Watson and Sons (Electr Medical), Ltd. The approximate cost of the buildi and its equipment was £52,000.

MEDICINE AND THE LAW

Death after Vaccination.

ON Jan. 24th an inquest was held at Warringt touching the death of J. H. Chetter, a fitter's labour employed by Joseph Crosfield and Sons, Ltd., soa and chemical manufacturers. A few weeks earli there had been a local outbreak of small-pox. Tw cases having occurred at the company's works, t management invited all employees to be vaccinate While vaccination was optional, workmen who refus to be vaccinated were informed that they would suspended from work for an indefinite period. T deceased man, though reluctant to be vaccinate agreed to take this precaution rather than be suspend from his work. He was vaccinated on the 5th wi four injections in his left arm. He continued at wo until the 11th when, owing to the swollen conditi of his arm and the pain he was suffering, he was se home during the morning. On the 13th he visit his panel doctor and obtained a sick note. Thr days later he visited the doctor again and was order

bed. On that day and on the 18th the doctor saw im at his home. His condition grew worse; he could ot open his mouth; tetanus was suspected, and e was removed to the Warrington Infirmary. He ied on Jan. 20th, and, as the infirmary doctors were nable to assign a definite cause of death and con- dered that the vaccination might have been a con- ibutory cause, Dr. E. E. Bowden, police surgeon, ıade a post-mortem examination and an inquest was eld. The employers and relatives were informed ıat they could be professionally represented at the ost-mortem examination, and Dr. Bowden's deposi- on stated that about 15 medical practitioners were resent. His deposition concluded as follows: "It hard to say that the vaccination accelerated death; e was not healthy; he was fatty." Dr. Bowden's ost-mortem examination report was to the effect ıat externally the body was well nourished with a rge amount of fat; the right leg showed scars of ealed ulcers; on the left arm the vaccine scars ppeared to be quite normal for the period (15 days) nce vaccination; internally the organs of the bdomen were normal with a large amount of fat; ıe heart showed some fatty infiltration, but was herwise normal; the brain showed vertical menin- tis extending down the outer and medial surfaces both hemispheres; there was no basal meningitis. r. Bowden's report gave meningitis as the cause of eath, and the jury returned its verdict accordingly. r. Samuel Brighouse, an experienced coroner, ghtly examined Dr. Bowden very carefully at the quest as to whether the vaccination had hastened contributed to the death, or whether death was in ıy shape or form in a great or small degree attri- ıtable to the vaccination. The witness was unable answer in the affirmative and consequently the ry, under direction of the coroner, could hardly ıve given any other verdict than that of "Death om meningitis," as already mentioned.

Chemist's Successful Appeal.

A brief report in the *Times* describes the appeal an Islington chemist from a conviction for selling ıiment of turpentine which did not conform to the rmula in the British Pharmacopœia. The Finsbury stices had convicted him of selling a drug which was ot of the nature, substance, and quality demanded the purchaser, and had inflicted a fine of £1. It as stated that the prescription employed by the ıemist's assistant was that contained in the London surance Pharmacopœia, a compilation stated to be rgely used by panel doctors. There had been no ggestion of fraud or dishonesty against the chemist, e prosecution being undertaken under the Sale of od and Drugs Acts on the mere ground that the ticle sold did not correspond in its composition with e standard which the purchaser might be deemed to pect. The London Sessions Court on March 9th ashed the conviction and remitted the fine.

SCOTLAND.

(FROM OUR OWN CORRESPONDENT.)

The Drain on the Insurance Fund.

THE evening papers are talking of "a crisis in tional Health Insurance" or "drain on the Sickness nd." This looks like the language of panic. Not ıg ago the talk was of gigantic surpluses and of ull steam ahead on additional benefits." Now the ady but somewhat too simple explanation offered is se certification by insurance practitioners, or scrupulous insistence of panel patients. Prof. exander Gray, the political economist, whose long perience in the Ministry of Health and as a Member the Royal Commission entitle him to a serious aring, has written a long and well-balanced letter the *Scotsman* on "a grave crisis." He knows the mplexity of the whole financial system of insurance well to assign the whole drain on the funds to any single cause. Commenting on certain statements[1] by Dr. Vernon Davies in the recent House of Commons debate, Prof. Gray says:—

"Dr. Davies's view would apparently be that what we are now suffering from springs from an inherent vice in the panel system, that that system rewards the easy-going, the not over-conscientious, and the flabby. On that I may not express an opinion. But I think it is incumbent upon me to underline the gravity of the present position. The panel system, with free choice of doctor, represents in many respects the ideal, retaining so far as may be the essential features of private practice; but its operation calls on both sides for singular scrupulousness and high integrity. It ought not to be necessary to protest that efficient administration does not mean the refusal of just claims. No one desires that, nor would anyone scruple to give the insured person the benefit of any reasonable doubt. It is, however, tolerably clear that much more than that is involved, and that claims which ought not to be made are being certified and admitted. This, it must be remembered, constitutes an injury to all others who may in future be entitled to prefer a claim against the fund which is thus being improperly depleted."

Prof. Gray adds that the present serious drain on the insurance funds represents the gravest crisis that the insurance scheme has been called upon to face since it was launched in 1912, and that all those who desire to secure continuance of the panel system with its freedom and flexibility should realise the critical nature of the period lying immediately ahead—

"For assuredly no Government, of whatever political complexion, could tolerate a further increase in the claims rate without taking into consideration the efficacy of the administrative machinery, which makes possible such a continued and unexplained augmentation of the burden on the insurance funds. It is in the hope that worse things may be averted that I have ventured to address you."

Factors in Depletion.

So far as Scotland is concerned the reason for depletion are not very evident. For example, the expenditure on the drug fund does not keep pace with the expenditure on actual sickness. The medical referees are kept tolerably busy; but the percentage of their rejections does not differ very seriously from, say, 1925. The percentage of the "failed to appear" is pretty constant from year to year (1926 was, of course, exceptional for other reasons). If it be the case that the approved societies have lost confidence in the insurance practitioners' certificates, and if those practitioners themselves increasingly rely on the medical referees to certify "capacity," obviously the whole panel system is in some danger. The clash of public and private interest is bearing its evil fruit. The numbers sent to the referees may be due, not to increasing sickness but to this want of confidence. It is nonsense to think that a financial system that is at one moment overflowing with money is at the next in a state of "crisis." And we have to remember that, after all, a great part of the serious work that might and should have been covered by an insurance fund is done by the voluntary hospitals supported, largely, by the workers' voluntary levy. It is probable that, at least in the industrial areas, the continuance of unemployment is now, to a great extent, showing the results natural to impaired energies. In a time of relative dearth the organism cannot maintain the same tension as in the period of plenty and the margin of resistance is bound to lessen. But, however we look at it, the position is unsatisfactory. The present occasion seems to me a good one for initiating inquiry.

The Education Authorities Election.

The Scottish Local Education Authority candidatures are in full swing, and the tale of attendance at meetings is even more depressing than usual. Twenty years ago, in Edinburgh, medical examination and treatment of school-children attracted relatively large audiences, but this time all interest seems dead, and it is recorded that two candidates arranged a meeting to find that not a single elector appeared. What does this phenomenal indifference to local

[1] THE LANCET, Feb. 25th, p. 420.

government mean? In the counties the larger area may account for the smaller interest, but this is not true of the cities. Perhaps "proportional representation" is having an effect. There seems to be no mechanism for producing a sharp clash of opinion. One year, when a "religious" question had arisen in the Edinburgh School Board, the meetings were overflowing and 33 per cent. or so of the electorate voted—a record figure, I believe.

Are we to expect the elector's educational interest to awaken only in moments of creative reform? Are we to take the present indifference as a sign of the adequacy of the machine, or as a hint that the relatively "golden age" of the first quarter of the twentieth century is rapidly coming to an end? I remember vividly the first Scottish School Board election away back in 1872, when the State took over the work of the churches. Now the churches are concerned about union and, at least in some of the areas, the electors are quite unconcerned about education. On the other hand, a greater number of capable individuals all over Scotland are discussing education in all its phases with more vigour than I have ever known. Is the lethargy among the electors simply a phase of the moral and physical depletion following the war? or is our very imperfectly organised "democracy" capable only of mass interest when the question is outside the day's routine?

Candidature of Dr. James Kerr.

Dr. James Kerr, formerly of the London County Council (Education), who now resides in Edinburgh, is a candidate for the Edinburgh Local Education Authority. His unsurpassed record as a pioneer school medical officer gives him a very strong claim.

BUDAPEST.

(FROM OUR OWN CORRESPONDENT.)

What is Cell Research?

Dr. Michael Lenhossék, professor of anatomy and histology in the University of Budapest, recently delivered a lecture here in which he pointed out that the last two decades had brought about an almost epoch-making transformation in histological research. Purely morphological studies, carried out chiefly by means of fixation, hardening, and staining, have been supplemented by the science of experimental cytology and histology—the study of living cells and living tissues.

The progress made in this field, said Prof. Lenhossék, is due to a steady improvement in technique over a period of many years. Among the methods available are vital staining, micro-dissection, and micro-manipulation; but far more important than these is the cultivation of tissues, explantation, or bioculture. The study of cells and tissues in a "fresh" state could at one time be carried out only in the "surviving" period—i.e., in the short time which passes between their separation from the living organism and the first sign of decomposition. During this period the cells utilise their reserve energy, and although they sometimes reveal the phenomena of life, they are really dying. The pioneers of explantations conceived the idea of removing tissue elements from the living organism and keeping them alive, thus making possible their propagation, and in embyronic tissues their morphological development. Credit for the first successful experiments belongs to the American Harrison, professor of zoology at Yale, who made his pioneer investigations in 1904 at Bonn, in Germany, in the laboratory of the anatomist, Nussbaum. He placed the nerve sheath of the spinal cord of a young frog in clotted frog-lymph, and observed that the sheath, though removed from the living organism, not merely did not decompose, but even showed signs of development, inasmuch as new peripheral nerve-fibres grew out of it. This observation of Harrison's was of great importance, said Prof. Lenhossék, from the point of view of neurohistogenesis, but it was of still more importance in that it laid the foundations of explantation. At present research on these lines is conducted in almost every civilised country. It has been found that the cells and tissues of the embryo can be grown and propagated to an almost unlimited degree in suitable cultures, just as bacteria can be; and thus they are, in the strict sense of the term, immortal. All that is necessary is to supply them with adequate nourishment and see that metabolic products are removed.

Tissue culture, continued Prof. Lenhossék, affords a valuable means of investigating cancer; malignant cells can easily be cultivated in vitro, and meanwhile we are in a position to observe their different features. It has been shown that the cancer cells differ from other cells chiefly by their atypical metabolism, in consequence of which they are secreting particular enzymes; these ferments explain the destructive effects of cancer cells and their inroads into the adjacent tissues. If the culture medium were changed to correspond, ordinary cells also could be influenced in such a way that they would assume the features of cancer cells. By means of tissue culture it also has become possible directly to observe, under the microscope, the action of the different pathogenic bacteria upon living cells, and the reaction of the latter. By placing tubercle bacilli in a test-tube containing a culture of lymph nodes the process can be seen which takes place when tuberculosis bacilli are attacking the healthy tissues of a living organism and the formation of tubercles, or destruction of the bacilli, can be followed step by step. Tissue culture is very important also from the point of view of pharmacology, because the action of the different drugs and poisons can conveniently be studied in living cells cultivated in vitro. Again, in connexion with regeneration by formation of scars and connective tissue, it has been possible by means of culture to prove that the fibroblasts of the young connective tissues are formed from the leucocyte elements of the circulating blood. As a result of their experience with such methods some investigators doubt whether rigid discrimination is justifiable between the different varieties of cell (epithelial, connective tissue, muscle cells), and have started a theory that the cells are originally of one variety, and that the difference between them at a later stage depend entirely on the medium in which they find themselves. They support this view by pointing out that epithelial cells may, in a certain culture medium, assume the form and features of connective tissue. They acknowledge, however, that there are also unchangeable varieties of cell. It is to be hoped that this and other fundamental questions will soon be definitely solved with the help of tissue culture.

WESTMINSTER OPHTHALMIC HOSPITAL.—At the annual general meeting of the governors of the Royal Westminster Ophthalmic Hospital, the Earl of Arran announced that the new building will be opened for out-patients on April 10th, and that it is hoped to have the whole of the hospital in working order at the end of May or the first week in June.

LONDON LOCK HOSPITAL.—At the invitation of the board of management of the London Lock Hospital in the Harrow-road the Minister of Health has appointed a committee to inquire into the management and administration of the hospital. The committee consists of Sir John Eldon Bankes, chairman; Dr. John Fawcett, and Mr. H. J. Tennant. The terms of reference are: "To inquire into the management, administration and staffing of the London Lock Hospital, with special reference to the arrangements for the medical treatment of the patients and to the provision made for the moral, social, and material welfare of the inmates." In May last 8 of the 13 members of the Ladies' Committee resigned, and in July the London County Council gave notice of their intention to reduce the annual grant to the hospital by £2000 a year. The chief complaint of the ladies who resigned was that the matron, assistant matron, and another member of the staff had been dismissed without consultation with the Ladies' Committee. They also claimed that women ought to be elected to the board of a women's hospital. The management is in the hands of the board which consists solely of men.

Correspondence.

"Audi alteram partem."

THE ASTHMA RESEARCH COUNCIL: AN APPEAL FOR FINANCIAL SUPPORT.

To the Editor of THE LANCET.

SIR,—The Asthma Research Council is preparing a ublic appeal for funds to carry out its object of ıcreasing our knowledge of asthma and allied ɔnditions. On the initiative of the Council a Medical dvisory Committee has been formed whose functions re to suggest what research work at present being ursued or projected should be supported by the ouncil, to indicate future lines of investigations, and) supervise such work.

The following preliminary suggestions have been ıade :—

(1) The formation of an asthma clinic at one or more ɔspitals, for the investigation of the "asthma-hay-fever-rticaria-syndrome."

(2) An investigation into the phenomena of sensitisation relation to asthma.

(3) An investigation into the nature of the asthmatic tack, from the physiological standpoint.

(4) An investigation into the relationship of asthma to neral respiratory diseases.

(5) An investigation into the family histories of asthmatic ıd allied conditions.

(6) An investigation into the nature of alleged "cures." his would include the continuation of the work of the ritish and American Medical Associations in investigating cret remedies.

(7) The provision of whole or part-time research scholar-ips and grants in aid for such investigations and for hers being carried out or projected by general practitioners, edical centres or research institutions, throughout the mpire, which are approved by the Medical Advisory ɔmmittee.

(8) The appointment, from time to time, of travelling vestigators to visit foreign clinics where investigations to asthma or allied conditions are being undertaken.

(9) The publication of any useful results obtained.

In order to carry out these schemes the Asthma esearch Council hopes to raise a fund of £50,000, ıd the Medical Advisory Committee trusts that embers of the medical profession will assist by inging to the notice of their patients—especially of ieir asthmatic patients—the aims of the Council and s need of support.

Subscriptions should be forwarded to the West-inster Bank, Ltd., Covent Garden, W.C. 2.

(Signed)—

ARTHUR F. HURST, Guy's Hospital (*Chairman*).
R. J. S. MCDOWALL, King's College (*Vice-Chairman*).
H. W. BARBER, Guy's Hospital.
L. S. T. BURRELL, Brompton Hospital.
E. C. DODDS, Middlesex Hospital.
J. FREEMAN, St. Mary's Hospital.
R. D. GILLESPIE, Guy's Hospital.
V. E. NEGUS, King's College Hospital.
S. GILBERT SCOTT, London Hospital.
T. T. JEANS, Surg. Rear-Admiral (Ret.), (*Hon. Secretary*).

March 12th, 1928.

ONGENITAL HYPERTROPHIC STENOSIS OF THE PYLORUS.

To the Editor of THE LANCET.

SIR,—The question whether these cases should be eated by medical measures alone or by surgical ɔeration is one which is still unsettled. The lative rarity of the condition and the difficulty of tting groups of cases which are exactly comparable ıs hitherto prevented its solution statistically. The ctor which controls the surgical mortality above all se is the early recognition of the disease followed by ımediate operation. This I pointed out in a recent paper[1] based on 90 cases of the disease all treated by operation in the same institution. Of this group 15 were "private" cases and had suffered from vomiting on the average for 13 days—all recovered. The remaining 75 were "hospital" cases, and had an average duration of symptoms in fatal cases of 25 days; in these, the mortality was 48 per cent.

By whatever method the cases are treated, all observers have noted that the private case has a lower mortality than the hospital case; the earlier diagnosis in the private case appears to be the true explanation. Last year at the Birmingham Children's Hospital 44 cases of the disease were admitted; of these, 28 were operated upon with a mortality of 17·8 per cent., and 15 were treated medically with a mortality of 46·6 per cent. One case was moribund on admission and has not been included in either group. No selection of cases was made. In some units of the hospital all cases were operated on, in others, all were treated medically; in one case only was operation refused—the moribund case mentioned above which died within 24 hours of admission.

The interest of these figures lies, I think, in the fact that the two groups were drawn from the same geographical area and are therefore exactly comparable. The disease is relatively rare and appears to be rather unevenly recognised in various parts of the country. If this is so, then the mortality of the disease will vary with the source from which the cases are drawn, and will tend to diminish in any neighbourhood where recognition and early treatment becomes the rule. This improvement has been very noticeable in the area from which the Birmingham Children's Hospital draws its cases, for the surgical mortality has diminished from 40 per cent. in a group of 90 cases operated on in the years 1919–26, to 18 per cent. in 28 cases in 1927. Earlier recognition may be expected to diminish the mortality still further seeing that included in the above figures there were 21 "private" cases all operated on by the Rammstedt method and treated in the same institution with only one death, a mortality of under 5 per cent.

I am, Sir, yours faithfully,

Birmingham, March 8th, 1928. SEYMOUR BARLING.

COLONIC SPASM IN DIVERTICULITIS.

To the Editor of THE LANCET.

SIR,—In his Modern Treatment article last week, Mr. Gordon Bryan might have emphasised even more than he does the factor of spasm of the colon in diverticulitis, especially in those cases associated with stenosis. A few weeks ago I was asked to see an old lady of 80, in whom a progressively increasing constipation had been developing over a period of some six months. For three or four weeks she had not had a proper motion; the infrequent evacuations consisted of a few inadequate "rabbit droppings." When I saw her, she had for six days passed nothing by the rectum save occasional flatus; the abdomen was distended, and she was just beginning to feel a little nausea. Examination of the abdomen revealed a descending colon which could be felt as a very hard and moderately tender cord. A bismuth enema had, ten days previously, shown typical diverticula in the descending colon and the sigmoid.

I suggested dosing her with belladonna until symptoms of poisoning developed. She was given, therefore, 15 minims of the tincture every two hours, and watched carefully. In addition, an ounce of warm olive oil was carefully introduced into the rectum every four hours. She had been in the habit of taking liquid paraffin by mouth, and this was continued. In twelve hours she passed a good motion, and for the next three days she continued to pass a large quantity of fæces. Now she is living an ordinary, vigorous social life. Occasionally constipation threatens, but so far it has always been controlled by a return for a short time to smaller doses of belladonna.

[1] THE LANCET, Sept. 3rd, 1927, p. 492.

Spasm of the colon is very apt to develop in any condition of irritation or inflammation of the large bowel; and it is perhaps not enough recognised how large a part unsuitable diet plays in the maintenance of this condition. Especially does this seem to be the case when for various reasons imperfectly digested meat fibre reaches the large bowel, there to undergo putrefaction, with the production of offensive alkaline stools. It would appear that the products of the protein putrefaction may themselves irritate the large bowel; at all events, in many cases the forbidding of meat or fish, and the institution of a lacto-vegetarian diet (vegetables or fruit being given en purée) over a period of several weeks, produce even without the aid of drugs most satisfactory results.

Enemata in cases of diverticulitis should be regarded as somewhat dangerous weapons. In the first case of this disease which I ever saw, a "good enema" had been given—so good that it had evidently gone through one of the weak points of the gut wall, into the abdomen.—I am, Sir, yours faithfully,

Liverpool, March 10th, 1928. ROBERT COOPE.

GASTRO-DUODENAL ULCERATION.

To the Editor of THE LANCET.

SIR,—In your issue of March 10th your three correspondents appear to think that I am not in favour of the intensive alkaline treatment of gastro-duodenal ulceration. But I have used it continuously since 1919 and have written and spoken about its excellent results on numerous occasions. My advocacy of the treatment did not, however, prevent me from feeling distressed when one of my patients died in coma from alkalosis or from feeling satisfied when the recognition of the early symptoms—depression, anorexia, headaches, and nausea—in seven other cases may have saved them from a similar fate. Several deaths have been reported in America, and it is absurd for Dr. Cameron to speak about my "theory of alkalosis," or for Prof. MacLean and his colleagues to regard it as a "theoretical condition," simply because they have been fortunate so far in not seeing a similar case. It is admittedly rare, my eight cases representing about 2 per cent. in some 350 treated by this method.

Investigations are being carried out at Guy's Hospital and New Lodge Clinic with the object of eliminating the danger, and it is for this reason that it is important to study by modern physico-chemical and biochemical methods the effects of the different alkalis, though Prof. MacLean apparently thinks that such investigations are waste of time—a curious view for the director of a professorial unit. So far as we have gone, we believe that alkalosis can be prevented without any diminution in the favourable effect of the treatment by avoiding sodium bicarbonate and magnesium oxide and carbonate, all of which have the further disadvantage of stimulating the secretion of gastric juice after they have neutralised the acid present in the stomach at the moment of administration. If sodium citrate is given with each feed and the triple phosphates of magnesium and calcium (in proportions depending upon the state of the bowels) are given in powder form, the contents of the stomach can be kept permanently neutral, as we have been able to demonstrate by examining fractions taken at intervals throughout the day. The dose of alkali required is greatly reduced if the feeds are given hourly instead of two-hourly. It is difficult to see why Prof. MacLean advocated the use of bismuth oxycarbonate in his paper, as he now states that he realised that it does not act as an alkali under the conditions present in the stomach; or why he only referred to the anti-clotting effect of sodium citrate, although he knew that it was one of the most potent factors in the alkaline treatment he described.

American writers have laid great stress on the importance of pyloric obstruction and renal disease in connexion with alkalosis, but on looking into the details of the eight cases we have seen at New Lodge Clinic, I find that only one had any pyloric obstruction and only one any definite renal disorder. All the others had normal urine, a normal cardiovascular system and normal blood pressure, but two had a slight excess of blood-urea. In every case the blood-urea was much raised, though the urine remained normal, when the first symptoms appeared, this being doubtless a result and not the cause of the alkalosis as it fell rapidly when the treatment was discontinued.

Dr. Geoffrey Fildes states that it was assumed in the paper written by himself and his colleagues that "the present-day practitioner was sufficiently conversant with modern practice not to overlook such a obvious possibility of trouble" as oral sepsis. The fact remains, however, that, as I pointed out in my last letter, about 70 per cent. of the cases sent to the Clinic were found on expert dental examination to have oral sepsis.—I am, Sir, yours faithfully,

ARTHUR F. HURST.

New Lodge Clinic, Windsor Forest, Berks,
March 12th, 1928.

NEWSPAPER INSURANCE FROM A MEDICO-LEGAL POINT OF VIEW.

To the Editor of THE LANCET.

SIR,—When, recently, two London daily newspapers with a huge combined circulation (*Daily Mail* and *Daily Express*) decided to extend their free accident insurance benefits to include £100 for every fatal accident, it must have given some food for thought to many a medical practitioner. Was the fatal illness of to-day to become the fatal accident of to-morrow? After 20 years of the Workmen's Compensation Act, cases are still being fought out in the courts as to "what is an accident." In one case that went to the House of Lords it was laid down that "it might be just as serious to be hit in the eye by a single microbe as by a cricket ball." Newspaper insurance opens up a similar vista of difficulties. The strain of opening or closing a window on a person with a diseased heart might well be called an accident, especially if £100 depended upon the terminology used. The registrar of deaths or the coroner would probably have to use discretion in the matter.

I have recently been interested in "falling out of window" cases. They would appear to be on the increase. They occur in all sorts of places, hotels, institutions, private residences, and offices. In several cases an "open verdict" has to be returned owing to lack of evidence. Taken as a class, they might be the result of—murder, manslaughter, suicide, misadventure, accident, or sudden illness. A man might drop dead in a room beside an open window. If in doing so he happened to fall out of the window on to the ground below, it would be a difficult point to decide or prove the exact cause of death. It has no parallel to the case of a dead body thrown into the river to simulate drowning.

Newspaper insurance may add yet another responsibility on the already over-burdened medical practitioner.—I am, Sir, yours faithfully,

Old Broad-street, E.C., March 12th. J. J. SCANLAN.

DISPOSAL OF THE DEAD.

To the Editor of THE LANCET.

SIR,—The education of the public towards the ideal of cremation is slow, but it should not be difficult to instil into its mind at the present moment, when the conception of the ideal of health is developing that the dead are unclean and dangerous; that handling and kissing a body is revolting; that a "nice corpse" is an abomination, and not a thing to be made much of by friends and relations. In our temperate climate rapid putrefaction does not usually occur, and this tends to the belief that there is no danger in a body remaining in a house for a period up to a week. While it is difficult to prove that this danger exists, I think it is safe to assume

specially in view of the fact that the mouth and ose cannot be effectually closed, and that the earliest utrefaction occurs in the upper air passages.

There are two methods, I suggest, by which this anger could be averted. First, removal of the ody within 24 hours to chapels attached to ndertakers' premises, where refrigerating plant could e installed under the bier. Secondly, sanitation of he body within 24 hours. By this I do not mean mbalmment, but a simple and rapid replacement f the blood in the main vessels by a formalin or other ntiseptic solution. I consider that the medical ractitioner should definitely advise this in all cases here death has occurred through specific infectious evers, pneumonia, malignant disease, cardiac disease, ephritis, and in any disease where dropsy has ccurred; and point out to the relatives that he dvises this in order to protect the living.

One or other of these methods should be used hether the body is to be cremated or buried. Too aborate sanitation is not indicated, as it would tend prolong the time in which the body resolves itself to its natural elements. Both these methods, but rticularly the latter, would effectually lay that nnecessary bogy "premature burial," and this would e of great assistance to those to whom the idea of rial alive is a very real fear. I do not think that it ould take many years to instil these ideas into the blic, and I think that they should come primarily om the medical profession.

I am, Sir, yours faithfully,
C. BERKELEY WAY, M.B., B.S. Lond.

Finchley-road, N.W., March 9th, 1928.

FACIAL PAIN IN PULMONARY DISEASE.

To the Editor of THE LANCET.

SIR,—A case of pulmonary abscess associated with in referred to the face was reported in your columns st week by Dr. R. C. Hutchinson and Prof. J. S. B. opford. The absence of any reference by the thors to the work of Sir Henry Head on referred in in visceral disease suggests that a masterly ntribution to clinical medicine is less well known an it deserves to be. This may be explained by e fact that it is now over thirty years since it was blished in *Brain* (1893, p. 1; 1894, p. 339; 1896, 153). These three papers, however, are of such r-reaching importance, both for the diagnosis of sceral disease and for the correct interpretation of in, that no clinician can afford to leave them unread. With regard to referred pain in pulmonary disease, r Henry Head showed that, as in the case of other ra-thoracic and intra-abdominal viscera, disease the lungs may produce referred pain in two areas, e on the body and one on the head. In disease the pulmonary apex these areas lie in the third d fourth cervical segmental areas, and the nose d the middle part of the forehead. These are the uations of the pain in the case reported by Dr. tchinson and Prof. Stopford, in which the abscess s situated in the upper lobe of the left lung. Sir nry Head's interpretation of the reference of pain the head and face in visceral disease is based upon skell's observation that the vagus and the glosso-aryngeal nerves represent the visceral branches a set of nerves whose somatic sensory roots are be found in the sensory portion of the trigeminal. suggests that the impulses referred to the area of fifth nerve reach the brain by the vagus.

This explanation, if correct, would account for the currence of referred pain in the case reported, in te of the fact that the phrenic nerve had previously en resected. Moreover, it seems a more likely pothesis than that a close relationship exists tween the trigeminal and the phrenic.

I am, Sir, yours faithfully,
ondon, W., March 13th, 1928. W. RUSSELL BRAIN.

Mental Breakdown in Adolescence.—In Dr. J. B. Strafford vis's letter which appeared in our correspondence columns week the word in the fifteenth line, twice printed etermination," should read "deterioration."

Obituary.

HENRY WILLIAM LANGLEY BROWNE, O.B.E., M.D. BIRM., F.R.C.S. EDIN., LL.D. TORONTO.

Dr. Langley Browne, whose death took place at Birmingham on March 7th in his eightieth year, was held in high regard as a practitioner throughout the Black Country, and among his colleagues as one who cared much for the advancement of medical knowledge and prestige.

Henry William Langley Browne was born at Bishop Auckland, Co. Durham, on Nov. 28th, 1848, the son of Dr. Benjamin Stocks Browne. Soon after his birth his father, who had only qualified in 1844, removed to West Bromwich, where he practised during the remainder of his life. The son went to school at Edgbaston and Sydenham College, going on to his clinical study in Birmingham hospitals, and qualifying M.R.C.S. in 1870 and L.R.C.P. Edin. a year later. Immediately on qualification he joined his father in practice, adding another 50 years to the family connexion with West Bromwich. He soon obtained an appointment on the staff of the local hospital, to which he was attached for nearly 30 years, and becoming interested in surgical technique he communicated a number of articles to the medical papers on ligature of arteries, appliances for bloodless operations, and various types of industrial emergency. About this time he was appointed surgeon to the Great Western Railway, and was also acting as medical officer to the G.W.R. Provident Society. Though very busy as a practitioner in these and other directions, he found time to take the F.R.C.S. Edin. and all the medical degrees granted by the newly formed University of Birmingham. He also became an active member of the Birmingham and District General Medical Practitioners' Union, serving on its executive and ultimately presiding over its counsels. In 1893 he was elected to represent the Midland Counties branch on the Council of the British Medical Association, of which in turn he was chairman from 1906–08. At other periods he was president of the Midland Medical Society and of the Association of Factory Surgeons. In 1901 he was elected a member of the Council of the Medical Defence Union, giving valued assistance in that capacity until his election as a Direct Representative on the General Medical Council in 1906 compelled him to resign; he was returned at the head of the poll then and again at the general election in 1911, sitting on the Council until 1920. During his period of office he presided over the Unqualified Practice Prevention Committee set up by the Council in 1907, and his hand was seen in admirable reports presented to the Council by that committee in 1908 and 1911.

DR. LANGLÉY BROWNE.

The first report, made with the coöperation of the officers of the Council and of many official bodies, included a digest of the laws in force within the British Empire and in foreign countries designed to restrict medical practice by other than legally qualified persons, and was followed by a supplementary statement from Dr. A. G. Bateman, the late secretary of the Medical Defence Union, drawn up from the Statutes of the different provinces in Canada and of the different American States. The report formed an admirable synopsis of the professional status of medicine in the civilised world, and in submitting it to the Council Dr. Langley Browne moved that "as the present Acts did not sufficiently enable persons requiring medical aid to distinguish qualified from unqualified practitioners the Government should be requested to take steps for the appointment of a Royal Commission to inquire into the evil effects of unrestricted medical practice by the unqualified. The motion was agreed to, and the substance of the report and the attitude of the General Medical Council received wide commendation. Although no Royal Commission was appointed, there is no doubt that Dr. Langley Browne's report focused public as well as medical attention upon weaknesses in the existing Medical Acts.

During the period of the war, though in the late sixties, Dr. Langley Browne took charge of the Churchfield Red Cross Hospital at West Bromwich, and placed his intimate knowledge of general practice and practitioners at the service of the Central Medical War Committee. Two years later he retired finally from practice as the result of an accident which deprived him of his eyesight, but not of his continued interest in medical affairs.

One of his colleagues writes of Langley Browne as a man of high principles who vigorously opposed all unethical practices. No one in the district was held in higher respect or more thoroughly deserved the confidence of professional colleagues, and his enforced withdrawal from active work was deplored by a wide circle of medical friends and patients.

Dr. Langley Browne was a life member of the governing body of Birmingham University and a justice of the peace for the county of Stafford. Toronto University made him a hon. LL.D. He married Gertrude, daughter of R. Heckels, of Sunderland, by whom he had one daughter.

THE photograph of the late Dr. James Wheatley, which was reproduced in an obituary notice last week, was the copyright of Messrs. Elliott and Fry, Ltd.

Public Health Services.

REPORTS OF SCOTTISH MENTAL HOSPITALS.

THE 1927 reports of the *Aberdeen* and *Glengall* mental hospitals have reached us with commendable promptitude, following by only a short time the 1926 reports of some other institutions. On the last day of 1927 there were 799 patients on the *Aberdeen* register, including 44 voluntary boarders, one of them rate-aided. The recovery-rate for the year was 31·67 per cent. and the death-rate 8·21 per cent., a reduction on the average for the past 30 years. Six of the 65 deaths were due to general paralysis and 12 to phthisis. The malarial treatment has proved satisfactory, and protein shock therapy has also been tried for general paralysis. Ninety-two patients had ultra-violet rays from a mercury-vapour lamp and all gained in weight. Some of the melancholic patients improved mentally. The dentist treated 162 patients, and reports that he found a marked improvement in oral conditions compared with the previous year. Diathermy gave gratifying results in cases of sciatica and lumbago. 102 patients were examined for diagnosis under the new X ray plant, and a high-frequency apparatus has just been installed. The occupational therapy department has been enlarged, and two handlooms are to b set up. A detached pavilion is being erected for fema tuberculous patients.

There were 602 patients in the *Glengall Hospita Ayr*, on Dec. 31st, 1927, of whom 11 were voluntar boarders. In 20 per cent. of the cases admitted th mental disorder was associated with some form serious bodily illness, and 40 per cent. of the admissio were in a precarious state of health. Nearly two-thir were free from hereditary taint as far as the histori could be relied on—a figure which must bring th admissions very nearly into line with the gener population. The recovery-rate was 27 per cent. f men and 34 per cent. for women, a decline which reflec the large number of incurable cases admitted. Th death-rate was 12 per cent. and autopsies were he on 64 patients. The phthisis-rate was high and number of inmates died from general paralysis. Th general health was good. Parole is allowed freel and parties are sent to cinemas, concerts, and footba matches. The Visiting Commissioner comments the free homely atmosphere of the wards and th excellent arrangements for classification, with absen of noise and restlessness. Only 136 of the patien were unemployed at the time of his visit. Five nurs and one attendant gained their R.M.P.A. certifica during the year, bringing the total certificated up 44 per cent. of the women and 40 per cent. of the me

The *Roxburgh* District Board of Control had 3 patients resident in their asylum at the end of th financial year 1927, an increase of ten. Of the s voluntary boarders admitted during the year one w rate-aided. The recovery-rate was 34·4 per cent., figure which is kept low by the apparently increasi practice of sending senile persons to the institution a practice against which the medical superintende protests strongly. The death-rate was 7·6 per cen and autopsies were held in 17 cases. A small epiden of influenza in the spring caused no serious anxie A visiting dentist started work during the summ Two new verandahs are greatly benefiting new admitted patients. The Commissioners note that commendable attention is paid to the idiosyncras of individual patients in the matter of diet.

The *Stirling* District Board of Control report steady increase in the numbers of patients at th *Larbert Mental Hospital*. The total number under th Board's supervision at the end of the financial ye 1927 was 1226, of whom 897 were in the institutio Of all those admitted only 32 were classed as being average health. Twenty-three were suffering fro senile insanity, 15 from general paralysis, and 8 w mentally defective. Twenty voluntary patients w admitted during the year, of whom nine were ra supported, so that the Stirling parish councils appe to be more up to date in their views than other pa of Scotland. The medical superintendent points o that, as no grant has been paid in respect of a certifi patient since 1916, the parish councils lose nothing sending voluntary patients to mental hospitals. Th recovery-rate was 37·43 per cent. One of the m discharged had been a melancholic for 12 yea Eight patients were sent out on trial and only two h to return. The death-rate was 9·4 per cent., th lowest for some years. A post-mortem examinati was held in every instance where permission w granted. General paralysis was the cause of death 17 cases and phthisis in seven. Enteric caused anxie in the spring, but otherwise the general health w good. No carriers were found. New patients a admitted to verandah beds in the reception hospit and the method is found highly satisfactory. Six eight patients were treated by the electrical instal tion, and many derived benefit from Schnee bat high frequency, and artificial sunlight. A tungst arc has now been provided for local treatments. Th visiting dentist saw 215 patients during the ye and reports that very few of the recent cases sh healthy mouths. An occupational therapy departm has been started, and rug-making, raffia, and bask work are taught. The old admission hospital h been turned into an open-door home for convalesc

nd parole patients, and is greatly appreciated. hronic industrial patients are now accommodated in nother separate block, and a third takes the sick and nfirm, with a department for the tuberculous and one r epileptics and troublesome patients. Most of the ilk for the institution comes from the home farm, nd new byres are to be erected. 3086 eggs were rovided during the year from the poultry farm, and he gardens, while showing a balance of £1076, rovided all the vegetables and flowers needed. Fifty- our members of the nursing staff hold their certificate, n of whom passed the final during the year.

The *Inverness* District Asylum housed 723 patients t the half year 1927, an increase of 17 on the previous ear. The recovery-rate was 26·3 per cent. and the eath-rate 9·5 per cent. Phthisis and senile decay ccounted between them for 47 per cent. of the fatal ases. Autopsies were performed in eight instances. uring the year 15 patients were sent out on trial. nly 16 of the 141 who have now gone home on robation have had to return to the hospital. There as an influenza epidemic in March, but otherwise the eneral health was good. Many of the male patients ork in the garden and farm, and the supply of milk, otatoes, and vegetables has been adequate for the eeds of the institution. Eight nurses and one tendant gained their certificate during the year.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED MARCH 3RD, 1928.

Notifications.—The following cases of infectious isease were notified during the week :—Small-pox, 35 (last week 392) ; scarlet fever, 1711 ; diphtheria, 481 ; enteric fever, 28 ; pneumonia, 1572 ; puerperal ver, 37 ; puerperal pyrexia, 114 ; cerebro-spinal ver, 14 ; acute poliomyelitis, 6 ; acute polio- ncephalitis, 2 ; encephalitis lethargica, 33 ; dysen- ry, 9 ; ophthalmia neonatorum, 118. No case of holera, plague, or typhus fever was notified during he week.

The cases of small-pox were notified from the following counties :—London, 2 ; Bedford, 1 ; Berks, 1 ; ambridge, 1 ; Chester, 4 ; Derby, 13 ; Durham, 83 ; loucester, 2 ; Hertford, 1 ; Lancaster, 38 ; Leicester, 1 ; incoln, parts of Lindsey, 2 ; Norfolk, 1 ; Northumberland,) ; Nottingham, 12 ; Oxford, 1 ; Southampton, 1 ; Staf- rd, 4 ; Suffolk East, 1 ; Warwick, 14 ; Yorks, North iding, 9 ; West Riding, 74 ; Brecknock, 1 ; Glamorgan, 4 ; Monmouth, 44.

The number of patients in the Infectious Hospitals of the etropolitan Asylums Board on March 6th–7th was as llows :—Small-pox, 11 ; scarlet fever, 1682 ; diphtheria, 315 ; enteric fever, 28 ; measles, 1460 ; whooping-cough, 55 ; puerperal fever, 13 (plus 11 babies) ; encephalitis thargica, 71 ; poliomyelitis, 1 ; "other diseases," 31. t St. Margaret's Hospital there were 15 cases of marasmus, 2 babies (plus 3 mothers) with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns, including ondon, there was 1 death from small-pox, 2 (0) from nteric fever, 167 (89) from measles, 4 (1) from scarlet ver, 41 (16) from whooping-cough, 47 (10) from diph- heria, 51 (7) from diarrhœa and enteritis under two ears, and 93 (21) from influenza. The figures in arentheses are those for London itself. The deaths om enteric fever outside London were reported from ristol and Warrington. Of the 78 fatal cases of easles outside London, 19 were reported from lymouth, 12 from Sheffield, 7 from Manchester, 6 om Derby, 5 from West Ham, 4 each from Bristol nd Worcester, while the figures from Glasgow and ublin for the same week were 15 and 10 respectively.

Small-pox Deaths.—We learn from Dr. W. Campbell yons, medical officer of health for South Shields, hat since Feb. 21st four deaths of small-pox patients ave been reported in the county borough, the articulars of which are as follow :—

1. A woman, aged 30, vaccinated in nfancy, was notified s a small-pox case on Feb. 21st and removed to hospital n that day. Onset Feb. 14th, rash Feb. 20th. On dmission to hospital her temperature was 100°F., about our hours later it was 103°, and at the time of her death, about 6 A.M. on Feb. 22nd, it was 107°. The death was certified as : (1) ulcerative endocarditis, (2) small-pox.

2. A female infant, born prematurely (7–8 months) on Feb. 4th, admitted to hospital on Feb. 25th, rash Feb. 24th. Onset unknown ; unvaccinated ; died on March 1st. Death certified as : (1) premature birth, (2) small-pox.

3. A woman, aged 66, notified as small-pox and removed to hospital on March 3rd. Onset Feb. 28th (?), rash March 3rd ; supposed to have been vaccinated in infancy, but marks not apparent. She was in frail health and as the home circumstances were very bad she was removed only after careful medical examination. She died six hours after admission to hospital. The cause of death was certified as : (1) senility or debility, (2) small-pox.

4. A boy of 6 years, unvaccinated, died on March 4th before any notification of the disease had reached the department. Onset Feb. 28th, rash March 4th. From an examination of the body the assistant M.O.H. formed the opinion that the case was one of small-pox, of hæmorrhagic type, and the private medical attendant has given a certificate in these terms.

In regard to the death from small-pox reported from Bradford in the return for the week ended Feb. 25th, we understand from Dr. J. J. Buchan that the patient was a man of 54 admitted to the Bradford small-pox hospital from outside the district. On admission to the hospital he was suffering from hemiplegia and diabetes, with diabetic gangrene of the toes, and Dr. Buchan adds that, in his opinion, small-pox was a factor of small contributory importance to his death. He had been vaccinated in infancy.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Lt. A. de B. Joyce to be Surg. Lt.-Comdr.

ROYAL ARMY MEDICAL CORPS.

Capts. to be Majs. : D. G. Evans, D. C. Scott, W. E. K. Coles, J. E. Brooks, W. J. Robertson, D. Fettes, E. Underhill, W. G. D. McCall, R. F. Walker, L. M. Rowlette, M. B. King, H. S. Moore, L. S. C. Roche, and B. L. Davis.

C. V. D. Rose, late Flight Lt., the R.A.F. Med. Serv., to be Capt.

ARMY RESERVE OF OFFICERS.

Maj. G. Baillie, having attained the age-limit of liability to recall, ceases to belong to the Res. of Off.

SUPPLEMENTARY RESERVE OF OFFICERS.

Lt. W. Boyd resigns his commn.

TERRITORIAL ARMY.

Maj. J. Allan, having attained the age-limit, is retd., and retains his rank, with permission to wear the prescribed uniform.

Lt. C. M. Bradley to be Capt.

INDIAN MEDICAL SERVICE APPOINTMENTS.

A certain number of appointments to permanent commissions in His Majesty's Indian Medical Service will be shortly made. Full particulars may be obtained from the Military Department of the India Office, Whitehall, S.W.

SMALL-POX LEAVE RESTRICTIONS.

A Fleet Order has been issued recapitulating the restrictions on leave of officers and men proceeding to any town or district in which an outbreak of small-pox has been notified. In the November list 25 towns and districts were mentioned. These places now number 58. The recent additions embrace Abercarn U.D. (Mon.), Birmingham C.B. (Warwick), Clayton U.D. (Yorks), Felling U.D. (Durham), Foleshill U.D. (Warwick), Kiveton Park R.D. (Yorks), Sheffield C.B. (Yorks), and Spennymoor U.D. (Durham).

DEATHS IN THE SERVICES.

Colonel Sir Robert Neil Campbell, I.M.S. (retd.), who died at Lahore on Feb. 18th at the age of 73, was educated at the Edinburgh Institution and at the University of Edinburgh. He joined the Indian Medical Service in 1877, and served in the Naga Hills Expedition of 1879–80 (mentioned in dispatches and medal), and also in the Akha Expedition of 1883–84 (mentioned in dispatches). He then served as Civil Surgeon at various stations in Bengal, and received the Kaisar-i-Hind gold medal in 1900. In 1909 he was appointed Inspector-General of Civil Hospitals in Eastern Bengal and Assam, and on the reconstitution of Bengal was gazetted to Assam as Inspector-General of Civil Hospitals and Prisons and Sanitary Commissioner.

Col. Campbell, who retired in 1914, had charge of two of the hospitals established at Brighton during the war for Indian soldiers. He received the C.I.E. in 1909, the C.B. in 1912, and the K.C.M.G. in 1917.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

Invaliding in the Royal Navy.

On March 7th Sir Bertram Falle in a logical speech moved that the rules by which disability from disease is attributable to or is aggravated by service in the Navy should be re-examined, as well as the manner in which those rules are interpreted. He pointed out that the percentage of rejections among intending recruits is so high as to show that the naval ratings are the pick of the country, while at the same time removal from the Service for tuberculosis is frequent. This he considered could only be accounted for by the unhygienic nature of the employment, especially the sleeping facilities. The Survey Board in charge of the removals found themselves able to hold that tuberculosis was attributable to or aggravated by occupation in but a small number of cases—the percentage, he admitted, had gradually risen from 3 and 4 per cent. to 10 per cent.; but considering the circumstances of recruiting he held that the percentage should be much higher, while he pointed out that discharge without admission of liability, where the term of service had been less than ten years, would mean deprivation of pension. Sir Bertram Falle, while disclaiming any intention to belittle the medical profession, considered that a purely medical Survey Board, such as has existed since 1914, does not work so well as the previous arrangement whereby the president of the Board had to be a Captain R.N. (executive) for the ratings did not place the same confidence in the decisions. He held that a Board of Appeal should be granted both to rank and ratings before discharge for tuberculosis. Rear-Admiral Beamish, in seconding the motion, confirmed Sir Bertram Falle's view of the dissatisfaction existing, and pointed out that the rate of tuberculosis among the naval ratings is higher than that in the Army or in the civilian population, and was higher among the ratings than among those of officer's rank. He cited from personal experience facts to show that disease could only too easily be acquired during service in the Royal Navy, and he urged that the existing rules should be looked into, so that the State might get a clear idea of its responsibilities in the matter. Some method of insurance, perhaps on a contributory basis, might meet the circumstances. Mr. Ammon associated the Labour Party with the motion, and pointed to the remarkable diminution of tuberculosis in the post-office as showing what might be done. Dr. Vernon Davies informed the House how tuberculosis differed from certain other pathological conditions, when assessing the measure of disability or aggravation entailed by occupation was in question. He pointed out the practical difficulties involved, and indicated that a scheme of compulsory insurance for the Service against tuberculosis might meet the difficulties. Lady Astor joined in Sir Bertram Falle's contention that there should be a right of appeal from the decisions of the Survey, but the House was "counted" before a division was reached. It is felt by all parties that men invalided from the Navy should have all the circumstances closely scrutinised, and the subject should engage the attention of the House again at an early opportunity.

Army Estimates.

On March 8th Sir L. Worthington-Evans (Secretary of State for War), in moving "That Mr. Speaker do now leave the Chair on the House going into Committee on the Army Estimates, 1928," said that this year he was asking on Vote A for 153,500 men, or 13,000 less than last year. Economies had been made in the administrative services, principally in the Royal Army Service Corps and the Royal Army Medical Corps. The total amount which he was asking the House to vote was £41,050,000, or a net decrease of £515,000, as compared with last year. But owing to other causes the true saving to the Exchequer was £1,000,000.

Mr. Lawson said that there was a very significant fact which was worthy of the attention of the House, the War Office, and the country generally. It was that 84,000 recruits offered themselves last year, and out of that total about 28,000 were accepted as meeting the standard of physical fitness required for Army purposes. They had to put that side by side with the fact that the Secretary for War had stated that the Army was below standard, and that there was need for further men. He asked the House to consider what must be the real state of affairs among the civilian population if they saw a continually increasing standard of physical fitness demanded in regard to men who offered themselves for service. Last year the proportion accepted was 35 per cent., compared with 33 per cent. this year. Coming as he did from the homes of the masses of the people he said that there was very little hope in view of the present standard of life of an improvement in that direction during the next few years.

The motion "That Mr. Speaker do leave the Chair" w agreed to, and the House went into Committee of Supply the Vote for men.

Unqualified Dispensers.

Sir Wilfred Sugden said a conference sat in 1920 co prising representatives of the technical officers of the W Office who carried the responsibility of the supervision unskilled dispensers employed in hospitals and delega from the great body of organised pharmacists. T conference considered the proposals of the skilled men w were willing to undertake the responsibility of dispens in the Army, the field hospitals, and in the home hospit of drugs and other necessities. But nothing was done utilise all this expert knowledge which was patriotica offered to the defensive forces of the Crown, and pa cularly to the Army. The Navy utilised the services the skilled pharmacists to the full, and every country Europe followed the same practice. The first suggest made to the conference in question was that there sho be a commissioned officer in charge of every accredi military hospital in the country. It was contended t there should be three commissioned officers for a cert area in London. Next it was proposed that there sho be given full facilities for the unqualified dispensers w had been operating under medical supervision to qual The pharmacists were prepared to give special facilit for these men to acquire the necessary education to d with this important work. The recommendations of t conference had never been accepted in the slightest deg by the Army Council or by the Secretary of State, althou the representatives of the Army Council and the Secret of State had accepted those resolutions unanimously. was agreed by the conference that the appointment of th pharmacists would be an economical arrangement. T War Office at the present time were buying their necessa compounds already prepared, but if these could be ma up under the control and supervision of trained pharmaci there would be on the market prices of the 12 or 13 standa compounds which were necessary in the military hospit of this country a saving of from 50 to 70 per cent. of cost. If it was contended that economy through utilisation of unskilled labour in the hospitals was perfec covered and made fool-proof by medical supervision, wished to say that while paying his full quota of resp to the medical profession it was impossible for them control and guide and prevent any error that might a in dispensing and at the same time to secure cheapness the product. He had obtained from the University Cambridge details of the necessary qualifications of a n trained in chemistry in 1913 and also in 1927, and wh he compared the training given to the medical profess in pharmacy with that which was called for in the case certificated pharmacists he said that it was impossible the medical profession, while at the same time acting physicians and surgeons, to give the necessary guidance unskilled men in administering and dispensing medicin Either the medical or the pharmacist work must suff While criminals and civilians could demand that th medicine should be mixed by trained chemists, and wh lunatics were treated in the same way, the ordinary sold had his "number nines" prepared by those who w untrained for the work. They only asked that there sho be not less than one commissioned pharmacist, possibly senior rank, supported by an officer of junior rank in ea Army hospital at home and abroad with a senior co missioned pharmacist officer at the War Office. If th was not possible then an officer of senior rank should oper under the medical officers in each hospital at home a abroad.

Mr. Kirkwood moved to reduce the vote by 50,000 m

Reduced Strength of the R.A.M.C.

Sir Richard Luce said that he did not approve of t reduction of the vote, but he wished to raise several poi in regard to the Royal Army Medical Corps. First, th was a reduction in the estimates this year in the establi ment of that Corps of 22 officers and 284 men. That w out of an establishment of 4163, a reduction of about 6·8 cent. The reduction in the rest of the establishment of t Army was only about 1000 out of an establishment of abo 140,000, or about 0·7 per cent. This was only one-ter of the percentage by which the Royal Army Medical Co was to be reduced. It was mentioned in the estimates th this reduction was due to the closing down of certain hospit and a recent review of the number of equipped beds ma tained in military hospitals. He had no objection to t reduction of hospitals where that could be effected, or to coördination of hospitals where that could be done betwe one service and another, as had been done to some exte in the last year or two. He was one of those who believ that the medical services of the Army, Navy, and Air For would be benefited by the amalgamation of those service but the reduction of hospitals must not be the criterion

he establishment of the Royal Army Medical Corps. If he strength of that Corps were to depend solely upon the umber of beds, and if the duty of the medical service were nerely to look after the sick of the Army in peace-time, a nuch better system than the present one could be devised. Vhy should they have men of the Royal Army Medical 'orps doing duty in military hospitals at all? Such work ;ould be infinitely better done by women nurses and sisters. 'he duty to be done in these hospitals was the training of he male personnel for duty in war, and that duty could ot be done by women, for it was largely work in the field, lthough they knew how much work women did in the late ar close to the front. Therefore the establishment of the toyal Army Medical Corps must not be allowed to be based n the actual beds that were required in hospitals in peace-me. The proportion of men needed by the Corps as com-ared with other branches of the Service was based on the xperience of many years going back to the beginning of st century. Time after time as wars had come there had een difficulties, because in the intervals between those ars, through undue economy, the medical services had een reduced below the level of safety and efficiency, and is had rendered them incapable of doing their work in me of war. The work of the Royal Army Medical Corps the last war showed what had been gained by experience previous wars, and the Corps rose nobly to the occasion. here was practically no serious breakdown in any part hich had to be worked by that Corps, although there was partial breakdown in Mesopotamia where the medical ork fell on a branch of the Service—the Indian Medical ervice—which had been starved in peace-time. At the id of the war the Corps had been proved and was not found anting, but since then with the cry for economy there had en a perpetual and constant whittling down of the Service. 1923–24 there was a reduction of over 300 men; a year fore a reduction of 63; and this year there was another duction of 300 officers and men. There was an idea that edical service could be improvised in war-time out of vilian medical men. That was not a fact. Anyone who id had experience in the Great War realised that where ey had to deal with officers and men who had not received administrative training in medical work for war it took em a long time before they achieved anything like the ate of efficiency which was attained by Regular officers. ere were many branches of the medical service which re not the same in peace as in war. Medical sanitation is a complete service of its own, and required a different owledge and experience from that acquired in peace-time. reductions in the cost of the Army were necessary and ductions in the medical services were made, they ought be in proportion to the reductions in the other services.

The Upkeep of Military Hospitals.

In Vote 10 there was a sum of £69,000 for new buildings the various hospitals throughout the Empire—all very cessary improvements and additions to the hospitals, but was to their upkeep that he wished to call attention. It is impossible from the Estimates to see how much of the ,314,000 which was to be devoted to the upkeep of military ildings was to be devoted to hospitals. Last year circum-nces took him to the great hospital at Netley. One could t go to that hospital with its great traditions founded as was in that wave of military medical ardour after the imean War on the most beautiful site of Southampton ater, and see it as it was now without a sense of depres-n and gloom, and without feeling that they were not ing their duty to the sick soldiers in peace-time. Netley s the largest military hospital, and it was specially voted to men invalided from overseas. They went there find it in an atmosphere of gloom, a lack of paint and a k of care, the grounds allowed to go to rack and ruin, d this was in a place where everything might be the very st possible. He appealed to the Secretary of State to k into this matter of the upkeep of the hospitals. It uld do a vast amount of good if the right hon. gentleman uld visit them, and perhaps before doing so he might it a good voluntary hospital and compare the difference atmosphere. A year or two ago one of the greatest thorities on hospitals in this country said in his hearing—t with reference to military hospitals, but with regard to ier State hospitals—that as long as a department was nected with the State bare duty might be done, but no ice would be added to that duty and there never could a heart-beat in a Government department. They did want that to be said of the military hospitals. He did think it was so in war-time, but since then things had n drifting in such a way that they were not very far m that statement being true in regard to the military pitals.

New Candidates for the R.A.M.C.

There was also the important point of the failure to p up the establishment of the medical officers in the vice. He knew that that was an extremely difficult nt, and it was not at all easy to say why the Service failed to attract duly qualified men at the present time. Looking at it from a fair point of view he could not say that the pay of the Royal Army Medical Corps was insufficient, but the fact remained that there were not enough candidates coming forward and the Service was lacking in efficiency on that account. He thought that one of the chief causes was the feeling in the Service that it was a service that was being reduced and one which had not the sort of permanency necessary to keep up a feeling of esprit de corps. The constant reduction of strength and therefore the increase of work, was causing unrest among those who were already serving, and making them unwilling to get other men to join. He had felt it his duty to warn the Secretary of State against allowing this Service to go downhill by reason of a series of piecemeal reductions. The medical officers and their heads in the Army had not got the weight of power behind them to stand up for their particular share of the available money in the Estimates as had other departments. It was the duty of someone to bring to the notice of the Government and the country the fact that they were not getting their fair share, and that they were likely to be reduced below a state of efficiency. They had no direct representative on the Army Council, but only shared one with a very large number of other branches of the Service, and therefore they could never make their position known in the same way as if they had a representative of their own. If in years to come another war took place and the medical services were found unprepared or incomplete, the country would call out for blood as it had done on other occasions. Somebody would have to be made the scapegoat. Whoever it might be the chances were that the scapegoat would not be the Secretary of State of that time or any other Minister, but the heads of the medical departments would have to bear the brunt of the responsibility for what was being done now in piecemeal reductions of the Service. He therefore urged that while reductions and economies must be carried out, their application in a service so essential as the medical service should be in proportion to the reductions of other branches of the Service.

The Power of Expansion.

Lieut.-Colonel FREMANTLE said he wished to support what had been said by Sir Richard Luce in regard to the medical services. He thought that the medical members of the House could rightly plead for an extension of services in some directions, because they had supported economies in other services. On several occasions during the last nine years he and other medical Members had urged the futility of keeping up general hospitals for both the Army and the Navy in peace time at the same place. After several years, and following the reports of various committees, they had at last seen the reduction of these general hospitals one by one. It was a very difficult matter, and had to be done very cautiously and carefully in order that there might be no permanent damage, and that they might still have the power of expansion in case of need. But there was still room for further economy in that direction, and it was in that sense that the medical Members of the House urged the Government to continue on that line of economy. They felt, however, perturbed when economies were made in the machinery for expansion in case of need. The medical services consisted of two parts. The greater part consisted of physicians and surgeons—the tactical part which could to some extent, especially in connexion with the Territorial Army, be improvised in case of war. He meant that it could be imported from the civilian services. But there was the other part, the administrative part, the nucleus of each unit, which could not be so imported unless it had been trained. It had been suggested that the establishment of the Territorial Army must be cut down in peace-time, including the medical service, and despite representations from himself and his colleagues in the House the number of field ambulances to a Territorial division was cut down from three to one. That was a very serious thing. It meant that when the Territorial Army mobilised again expansion would be difficult. The reduction, he maintained, was excessive. The personnel of the Territorial Army medical services was down by one-third of its full strength. In the Regular Army they had still the difficulty of recruiting. A list published in the *Times* showed that they had managed at last to get 15 medical officers, as compared with the 60 that were required. They could not possibly support an army in the field unless they had an adequate supply of medical officers trained for their work. He urged the Government to pursue the work of securing recruits for the medical service. The real difficulty was not simply the question of pay, but the fact that the men now in the Service were overworked abroad, and instead of getting leave they were constantly kept at work beyond their time, the senior men being relied on to do comparatively junior work because there were no junior officers in the Service, and they were deprived of a great deal of their family life when they were getting towards the end of their service. These men did not give a good name to the Service

at home, and that made it all the more difficult to get the junior men. The medical service was a key service to the human machine, and it was essential to maintain these key services at the highest pitch.

The Soldier's Teeth.

Mr. MITCHELL BANKS said that whether the soldier's job was right or wrong nobody since the days of Homer had any doubts as to the value of the doctor. The soldier had three vulnerable points—his toes, his tummy, and his teeth. He thought that every doctor would agree that many of the intestinal complaints which soldiers suffered in India and Mesopotamia could have been prevented if only the teeth of the men could have been better looked after. He hoped that the Secretary for War when he was considering the medical aspect of the Army would not forget that unless they gave the soldier adequate teeth with which to consume his very healthy rations he was certain to fall a victim to rheumatism or to stomachic complaints.

Can the Medical Services be made more Attractive?

Dr. VERNON DAVIES said that he wished to associate himself with the speech of Sir W. Sugden in respect to pharmacists in the Army. The authorities at the War Office had taken the very definite position that the soldier in the British Army could be competently looked after by dispensers who had a small amount of training in the compounding and mixing of drugs, and they thought that the training of these men was sufficient to enable them to look after the medical needs of the soldiers. They might be right, but the Navy did not agree with them. The National Health Insurance administration under the Ministry of Health insisted that anyone who dispensed for the civil population must be a trained pharmacist. The Home Office had decided that prisoners in gaols must have their medicines dispensed by trained pharmacists. The War Office was alone in the attitude which they had adopted on this matter. If the War Office were right they should simply scrap all the pharmacists in the Navy, prison service, and National Insurance organisation and get the work done by cheap dispensers. If, on the other hand, the War Office was wrong, they might perhaps some day be inclined to consider the advisability of coming into line with the other services of the country. An army without an efficient medical service was of no use whatever. Had the Secretary of State done anything to see if that service could be made more attractive to medical men? Unless the War Office tackled this question seriously they would get into difficulties. The War Office had to remember that they were competing with panel practice and with all the public medical appointments in the country. When a young medical man soon after he had qualified could go into public medical service and work five days a week for £700 or £750 a year he had no definite inducement to go into the Army. A short service in the Army with either an increased gratuity at the end of the seven years, or preferably with retired pay, giving the War Office a call upon him at any time, would increase the popularity of the Service. If it could be arranged that any medical man who had served in the Army should have preferential treatment in applying for any State or municipal medical appointments that would make the Service still more popular.

Reply to the Debate.

Sir LAMING WORTHINGTON-EVANS, replying to points raised in the debate, said that to-day the dentist in the Army was not received with scoffs and scorn, but with open arms. There were 337 dentists and their assistants, and so well were they thought of that 16 had been added to their number in the course of the year. With regard to the pharmacists in the Army, the War Office had accepted some of the recommendations of the Committee which inquired into the matter. The recommendations which they were unable to accept would have involved a great deal of extra expense. The Government were of opinion that dispensing in the Army was carried out adequately and economically so far as the needs of the Army in peace were concerned. The Royal Army Medical Corps dispensers received adequate training for the work which they were called upon to do. As regarded the question of the Royal Army Medical Corps which had been raised by Sir Richard Luce and Colonel Fremantle, the reduction in that Corps was due to the closing of military hospitals in Cosham, Devonport and Chatham, and there was therefore a reduction in the number of equipped beds required. Owing to a closer coöperation with the Navy, military patients were now in certain cases treated at naval hospitals. The Committee which had been working on this question had enabled them to reduce the number of patients, and that accounted for the reduction of 22 officers and 271 other ranks. As a matter of fact, although that reduction appeared in the estimates, some of that medical personnel had gone to China and were carried on the supplementary estimate. Nevertheless, it was a reduction which was inevitable. In regard to the military hospitals, he (Sir L. Worthington-Evans) had visit most of the big hospitals in England, and he did not kn how it could be said that the Government were doi only their bare duty if the hospitals were good and we looking after the patients properly. Sir R. Luce had co plained of the gloomy atmosphere of these hospitals a of the absence of paint. That really was not the test o hospital; the real test was the medical service, and ev the social service which the patients received in th hospitals, and his experience of the Army hospitals he h visited was that they were not gloomy, that it was a gr deal more than the bare duty which was being done, a that real human attention was being given to men w seemed happy in the hospitals and content with the tre ment which they were given there. Sir R. Luce seem to suggest that the medical service was treated as a C derella service, that cuts were made in it out of proporti to the cuts made on the rest of the Army. That was rea not quite the position. In these estimates out of a to of £41,000,000, £2,400,000 was being devoted to the medi services. Unfortunately it was true that they had not t number of doctors who were required for their establi ment. They had done their best to make the Serv attractive. He had conferred with his medical advis and with the medical societies, and he thought now at a rate the terms and conditions of service were agreeable the medical profession. He had had the endorsement the medical profession. The short service which had b referred to he brought in two years ago. Men could n join for seven years, and if they then wished to retire was optional—they had a gratuity of £1000. Of course hon. friend wanted more. He wished he could give Service more, but let him not say £1000 was nothing. was a very useful addition to the capital of a young medi man who was about to set up in practice. As to the gri ance that the Army Medical Service were not direc represented on the Army Council, every branch of Service could not be directly represented on the Ar Council when there were only four military members the Council. But the Director-General of Medical Servi had direct access to the Secretary of State at any t without having to go through any military superior.

The motion to reduce the vote was rejected by 189 v to 20.

HOUSE OF COMMONS.

THURSDAY, MARCH 8TH.

Lunacy Administration.

Mr. FREDERICK ROBERTS asked the Minister of He what amount had been expended on lunacy administra in the last year for which statistics were available; many certifications took place during the same peri and how many people were discharged.—Mr. CHAMBERL replied: The expenditure of local authorities in Engl and Wales on lunacy administration for the financial y 1926–27 amounted to £7,803,804. During the same pe loans were sanctioned for capital expenditure amountin £242,335. During the calendar year 1927 the certificat and discharges were as follows:—

	Certifications.	Discharg
Public mental hospitals ..	20,474	9,823
Other institutions and single care	1,419	892
Total	21,893	10,71

Anthrax Statistics.

Dr. VERNON DAVIES asked the Home Secretary number of cases of anthrax in this country for the last t years for which statistics were available and the origi infection in each case.—Sir WILLIAM JOYNSON-H replied: I can give only the figures for cases of anth reported in factories and other premises under the Fac and Workshop Acts in the years 1925 to 1927. The p cipal figures in the table give the number of cases; figures in parentheses give the number of deaths.

Origin of infection.	1925.	1926.	1927.	Tot
Wool and hair (other than horsehair) ..	26 (5)	16 (2)	18 (1)	60
Horsehair or bristles ..	3 (2)	8 (1)	3 (1)	14
Hides and skins ..	18 (3)	15 (1)	13 (1)	46
Other*	1	3	1	5
Total	48 (10)	42 (4)	35 (3)	125

* The suspected materials in these cases were: feather bones, 1; felt or tanned leather, 1; refuse from an products, 1; not ascertained, 1; total, 5.

Factory Inspection in Scotland.

Mr. BUCHANAN asked the Home Secretary if he was aware hat in a large number of factories situated in the West of cotland particularly employing young female labour actory inspectors rarely, if ever, paid a visit; and what eps he was prepared to take to secure safety by having roper inspection made.—Sir W. JOYNSON-HICKS replied: he hon. Member exaggerates the position. I am informed hat out of 157 factories in the West of Scotland employing oung girls which were not inspected last year, 86 had been isited within a period of 15 months, and all but six of them ithin two years. I have repeatedly stated that I am not atisfied with the present strength of the factory inspectorate, nd that I propose to set up a committee to examine the uestion. As the committee would have to take account the new situation created by the Factories Bill, I had ot contemplated appointing it until the Bill had been assed. I am very anxious, however, particularly as the ill has been postponed till next year, that no time should e lost, and I am proposing to advance the commencement this inquiry and proceed with the appointment of the mmittee in the autumn.

Importation of Dangerous Drugs.

Mr. DAY asked the Home Secretary whether his attention ad been called to the remarks of the coroner at a Kenngton inquest on Mrs. Ida Mary Gropper, in which he ated that he was strongly of the opinion that legislation ould be introduced for the purpose of restricting the nport of the French hypnotic drug known as dial; and hether he proposed to take any action in the matter.—r WILLIAM JOYNSON-HICKS replied: Yes, Sir. The uestion of the need for further restrictions in the case of rtain kinds of drugs has been brought before the Interpartmental Committee which has been examining the w relating to poisons. I will see that the circumstances the case to which the question refers are brought to the tention of the Committee.

MONDAY, MARCH 12TH.

Royal Air Force Hospitals.

Dr. VERNON DAVIES asked the Secretary of State for Air he would give a full list of Royal Air Force hospitals at me and abroad, the number of beds in each hospital, id the personnel attached to each hospital.—Sir S. HOARE plied: The following is the information requested:—

Locality of the R.A.F. hospitals.	Equipped beds.	Hospital personnel.		
		Officers.	Nurses.	Airmen.
ome—				
Halton	309	9	38	98
Cranwell	100	6	12	41
Uxbridge	31	4	9	10
aq—				
Hinaidi	200	10	23	75
Basrah	35	5	7	24
alestine—				
Sarafand	77	5	6	35

This statement is based on the present establishment, hich is now under review. It should be added, first, at the hospitals in Iraq and Palestine provide for British my officers serving with the local ground forces in these untries, and for certain British civil officials in addition the Royal Air Force; and, secondly, that the personnel tached to most of them also perform duties apart from e duties directly connected with the respective hospitals—g., the officers at the Cranwell Hospital are also medical icers for the Cranwell Command as a whole. The Indian ctions of the hospitals in Iraq are excluded.

Experiments on Living Animals.

Mr. NEIL MACLEAN asked the Home Secretary whether had caused any inquiry to be made as to the large increase the number of experiments performed on living animals d, if so, whether any reason had been given for such an crease; and, if no inquiry had been made by his depart-nt, whether he would institute one.—Sir WILLIAM YNSON-HICKS replied: The increase referred to is mainly inoculations, feeding experiments, and similar procdures; and I understand that it is due principally to the velopment of medical science in regard to the standardising drugs and the investigation of vitamins, and to the steps ken to safeguard the purity of the milk-supply. I see no ound for any special inquiry.

TUESDAY, MARCH 13TH.

Temporary Commissions in the R.A.M.C.

Mr. BARNES asked the Secretary of State for War whether -Service men were disqualified for appointment to a temporary commission in the Royal Army Medical Corps if they were in receipt of a disability award.—Sir L. WORTHINGTON-EVANS replied: The fact that an ex-Service man is in receipt of a disability award is not in itself a disqualification for appointment to a temporary commission in the Royal Army Medical Corps, but such cases have naturally to be considered very carefully in view both of the possibility of aggravating the disability and of the danger of the officer's breakdown in the performance of his duties.

Pension Awards.

Mr. WALTER BAKER asked the Minister of Pensions the number of first awards of pension to fresh applicants during 1927, and the number of conditional awards current on Jan. 1st, 1928.—Lieut.-Colonel G. F. STANLEY (Parliamentary Secretary to the Ministry of Pensions) replied: The total number of first awards of all kinds made in the calendar year 1927 was 4355. On Jan. 1st, 1928, there were about 8500 officers and nurses and 146,000 men in receipt of conditional awards in respect of disablement arising out of service in the Great War.

Treatment of Scottish Disabled Pensioners.

Dr. SHIELS asked the Minister of Pensions (1) how many disabled pensioners there were in Scotland, and what was the average number for the last three years of disabled or affected men without pension who had attended the Ministry centres for treatment; (2) how many men in Scotland last year received home treatment with allowances, and what was the total number of hospital beds in Scotland which the Ministry considers adequate; and (3) how many Scottish disabled men were being treated in England; what were the numbers for the respective diseases or conditions; and where were the places of treatment.—Lieut.-Colonel G. F. STANLEY replied: The total number of disabled officers, nurses, and men in receipt of pension or other grant from the Ministry in Scotland is approximately 43,000. The average number of patients attending at Ministry clinics in Scotland and in receipt of in-patient treatment in each of the last three years was as follows:—

	Clinics.	Ministry Hospitals.
1925	960	.. 600
1926	610	.. 495
1927	425	.. 365

1484 disabled men received treatment at home together with allowances during the year 1927. The Ministry has in view hospital accommodation in Scotland for current needs of about 400 beds, which will provide a substantial reserve. In view of the decline in the requirements of hospital treatment, I am unable to estimate what accommodation may ultimately be found to be necessary; 105 Scottish disabled men are under treatment in Ministry hospitals in England. Of these 99 are in four hospitals—viz., Harrowby, Orpington, Cosham, and Maghull—which have been established for the treatment of special forms and degrees of nervous disease, including epilepsy, and six are medical and surgical cases receiving special treatment in Mossley Hill (1), Sidcup (2), and Roehampton (3) hospitals.

Use of Emulsifiers in Cream.

Mr. LAMB asked the Minister of Health (1) whether his attention had been drawn to the increasing use of emulsifiers for the reconstitution of cream as a result of the enforcement of the Public Health (Preservatives, &c., in Food) Regulations; how many prosecutions had taken place in cases of the fraudulent sale of the synthetic article as cream; and what further steps, if any, were contemplated by his department with a view to the suppression of the practice; and (2) whether he regarded synthetic cream as a foodstuff for the purposes of the Public Health (Preservatives, &c., in Food) Regulations; and what steps, if any, had been taken by his department to deal with the sale, as cream, of the synthetic article containing preservative.—Sir KINGSLEY WOOD replied: My right hon. friend's attention has been drawn to the increasing use of emulsifiers for the reconstitution of cream, but it does not seem likely that the Preservatives Regulations are responsible for the increase. I would point out that the prohibition of preservatives applies equally to natural and to reconstituted cream. A more probable explanation can be found in the fact that the latter article is said to be prepared at a cost much lower than that of the former. I am unable to state how many prosecutions have been instituted by the local authorities in respect of the sale of the synthetic article as cream. As my hon. friend is probably aware, the constituents of cream can be emulsified so as to produce an article which is very similar to natural cream. Investigations are, however, being made as to the possibility of distinguishing between the two articles by scientific methods. Pending the completion of these investigations, I am not in a position to indicate what further steps can be taken by my department

Medical News.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—At a meeting of the College held on March 8th the diploma of Fellow was conferred on Joseph T. Fathi (London Hospital).

Diplomas in Tropical Medicine and Hygiene were conferred (jointly with the Royal College of Physicians) upon the following candidates, who have studied for the diploma at the London School of Hygiene and Tropical Medicine :—

C. R. Amies, Mary N. Andrews, R. E. Barrett, A. Bearblock, S. Bergsma, A. Dunlop, H. Fairbairn, Elisabeth Farra, H. A. Fawcett, M. M. Fihri, O. M. Francis, W. E. Giblin, H. K. Giffen, H. H. Gilbert, J. C. P. Grey, Alma B. Harvey, Eva Ho Tung, W. A. M. Jack, D. R. Jandial, B. M. Johns, R. S. Johnston, E. B. Jones, Margaret E. Lovett, Margaret M. McDowall, A. A. M. Magraby, R. C. Mahajan, M. V. Merchant, J. C. Milne, J. H. Oonvala, Thaliakattu Parukutti Ammal, J. R. Pierre, E. W. Reece, J. D. Reynolds, Enid A. Robertson, G. I. Shaw, T. A. Sherwin, G. A. Sloan, Hilda M. Smith, A. E. M. Soliman, Grace M. L. Summerhayes, V. E. Whitman, N. J. Willans, C. H. Williams, H. M. Willoughby.

Licences in Dental Surgery were conferred upon the undermentioned candidates :—

W. J. M. Allan and B. Cohen, Guy's; N. L. Craddock and G. S. Cubitt, Royal Dental; A. H. Curtis, Guy's; R. D. Daly, London; Cicely M. Finnemore, Royal Dental; R. P. Graham, Birmingham; L. E. James, Guy's; C. L. Noble, London; V. R. Preen, Guy's; W. I. Robertson, King's Coll.; L. R. Rowlands; M. A. Rushton, and C. J. C. Siggers, Guy's; E. Slack, Manchester; C. L. Stevens, Guy's; F. W. Threlfall, Univ. Coll.; H. C. J. Van den Brocque, Guy's; and J. Winter, Royal Dental.

UNIVERSITY OF LONDON.—Prof. Robert Robinson, F.R.S., has been appointed as from August 1st, 1928, to the University Chair of Organic Chemistry, tenable at University College.—Dr. J. B. Christopherson has been appointed examiner in tropical medicine for the year 1928 in place of the late Sir Percy Bassett-Smith.—Sir Wilmot Herringham has resigned his Membership of the Senate as one of the representatives of the Royal College of Physicians of London. In view of the forthcoming reconstitution of the University, the College does not propose to fill the vacancy.

The ceremony of Presentation Day will this year be held at the Albert Hall on Wednesday, May 9th, at 3 P.M. A Graduation Dinner will be held on the same day at 8 P.M. at the Grocers' Hall, Princess-street, E.C. Requests for tickets may be made to Mr. V. E. Wall, University of London, South Kensington, S.W. 7.

Applications for the University Chair of Biochemistry, tenable at the London School of Hygiene and Tropical Medicine, must be made in proper form to the Academic Registrar not later than April 11th.—A Carpenter medal, together with a money prize, will be awarded in 1928 for a thesis in statistical, genetic, comparative or experimental psychology, including the functions of the central nervous system and special senses, for which a doctor's degree other than Ph.D. degree has been awarded within three years ending May 31st, 1928.—The Senate will shortly consider grants from the Dixon Fund, which are allotted annually to assist scientific investigation. Grants will also be made from the Thomas Smythe Hughes Medical Research Fund, whilst applications are invited for the Laura De Saliceto studentship for the advancement of cancer research of the value of £150 a year. Particulars of these funds may be had from the Academic Registrar.

The election of Beit Fellows will take place on or about July 16th. Candidates must be under the age of 25, and not more than three Fellowships, of the annual value of £250, will be awarded. Applications must be received before April 20th on forms to be obtained by letter only from the Rector, Imperial College, South Kensington, S.W. 7.

At its meeting on Feb. 22nd the Senate approved a number of amendments to the regulations for the Diploma of Nursing.

THE LONDON HOSPITAL: QUINQUENNIAL APPEAL.—At the quarterly meeting of the House Committee, Lord Knutsford, the chairman, stated that his quinquennial appeal had, so far, produced a little over £44,000, £20,000 of which was the result of his broadcast appeal. During the past year there was a slight decrease in the number of patients treated; the average residence of the 16,000 in-patients was 15 days. The patients admitted contributed £32,075, an increase of £3368, chiefly due to the spread of the Hospital Saving Association.

ROYAL INSTITUTION.—On Thursday, March 22n at 5.15 P.M., Group-Captain Martin Flack will give t first of two lectures on Physiological Aspects of Flying.

BRITISH ORTHOPÆDIC ASSOCIATION.—The Robe Jones Medal and Association Prize for 1927 has been award to Mr. J. F. Brailsford for an essay on Deformities of t Lumbo-sacral Region of the Spine.

ST. ANDREW'S HOSPITAL, DOLLIS HILL.—T annual report shows that during the year there was average of 58 patients daily in residence in the hospit which is intended for the professional and middle class As there are only 52 regular beds, emergency accommodati had to be supplied. The hospital is trying to raise £15,0 at once towards the £30,000 required for a new buildi which will include a children's ward.

FELLOWSHIP OF MEDICINE AND POST-GRADUA MEDICAL ASSOCIATION.—On Monday, March 19th, 5 P.M., Prof. F. Langmead will deliver a lecture at t Medical Society of London, 11, Chandos-street, Cavendi square, on Dull and Backward Children. On Thursd March 22nd, at 5 P.M., Prof. Louise McIlroy will give lecture-demonstration at the Royal Free Hospital, and the same date, at 6.30 P.M., Mr. Theodore Just will give demonstration at the Golden-square Throat Hospit The lecture and demonstrations are open to members the medical profession without fee. From March 19 for a week, an intensive course will be given at the Hospi for Consumption and Diseases of the Chest, Brompto and from the same date for a fortnight, an all-day cou will be given at the Royal National Orthopædic H pital. A course for the general practitioner will be giv from the same date to March 30th at the Hampstead Gene Hospital, from 4.30 to 6 P.M., the instruction including demonstration or lecturette in medicine, surgery, and t specialties. No special courses will take place betwe March 31st and April 16th owing to the Easter Holida Information, syllabuses of special and general cours tickets, and copies of the *Post-Graduate Medical Journ* may be had from the Secretary of the Fellowship, 1, Wimpole-street, London, W.

HEALTH AND CLEANLINESS COUNCIL.—On March 9 the Council held its annual meeting at the Hotel Ce The proceedings, which dealt with the aims of the Coun and the extension of its work of assisting health activit by providing books, pamphlets, posters, lecturers, a cinematograph films, were held in private between lun and tea, after which were shown some of the films whi the Council lends without charge to bodies with simi objects. Dr. Andrew Balfour, proposing the health of t Council at lunch, said that the old Scots saying, "T clartier the cosier," had been changed by the pioneer pub health work of this country to "The dirtier the deadlie and that a man who lived under dirty conditions was danger not only to himself but to others. Fortunately t truth of that axiom was more apparent in tropical countr nowadays than in our own, but if anyone should think th all was well in England he had only to look at the state some London streets. It was, he said, a little beyond joke when foreign students at his school came and sai "You are always telling us about the necessity for cleanlin in the tropics; England is the cradle of hygiene; will y come out and look at some of the back streets here and s how they are?" Another possible field for the Counci activities was the sanitary provision for workmen engag on the many new buildings that were being erected in t city; until representations had been made the sanitati in the new School of Tropical Medicine itself would have l much to be desired. Americans who came to this count interested in hygiene matters were shocked at the way which our food was handled. In spite of numerous co mittees and reports, food was exposed where it should n be exposed. Fortunately there were not many flies, there would be a worse tale to tell. Dirt led not only danger, but to a lowering of the moral tone, and he look to the Council to combat the tendency towards decaden in these matters. On the bright side Dr. Balfour quot from an article in the *Journal of the American Medi Association* on typhoid in some of the largest Europe cities. No other country but this, he read, could show long a list of large cities free from a single typhoid deat and our freedom from this disease was a fine testimony the work of the public health service in this country. T new activities of the service, such as those against tub culosis and venereal disease, should not be allowed to pu cleanliness into the background, and it was fortunate th a Council such as this existed to guide the people up proper lines. Dr. G. F. Buchan, the President, outlin the objects of the Council, and each member of the par received a sample of its educational books, a work entitl Health and Cleanliness, a Text-book for Teachers.

ST. MARK'S HOSPITAL.—At the annual meeting on March 8th the Lord Mayor of London announced that the number of beds at this hospital had been increased to 72, and that an up-to-date cancer research laboratory had been provided. Last year 583 patients were admitted to the wards, and 6440 out-patients attended.

UNIVERSITY OF HONG-KONG.—At a congregation held on Jan. 9th the degree of M.D. was conferred on D. K. Pillai, and the degrees of M.B., B.S. upon 17 candidates. Under the Medical Act, 1886, degrees conferred by this University are registrable in the Colonial List of the Medical Register.

OXFORD OPHTHALMOLOGICAL CONGRESS. — The eighteenth annual meeting of this Congress will be held at Keble College from July 4th to 7th. On July 5th there will be a symposium on the Ultra-violet Ray, introduced by Dr. Leonard Hill, F.R.S., followed by Mr. W. S. Duke-Elder, and others. The Doyne Memorial Lecture will be delivered on July 6th by Prof. Arthur Thomson, his subject being Observations on the Eyes of Birds. Further information may be had from the Hon. Secretary, Mr. Bernard Pridland, Salisbury House, Wolverhampton.

NEUROLOGY AND PSYCHIATRY: COURSES AT VIENNA.—Systematic post-graduate classes in neurology and psychiatry will be held in English at the Neuropsychiatric Clinic of Prof. Wagner-Jauregg and the Neurological Institute of Prof. Marburg at Vienna University under the auspices of the American Medical Association of Vienna, from June 1st to July 31st. The fee will be $214 and the class will consist of not less than 8 and not more than 15 members. Further information may be had from Docent Dr. E. Spiegel, Vienna, I., Falkestrasse 3.

KING EDWARD'S HOSPITAL FUND FOR LONDON.—We are informed that hospitals situated within 11 miles of St. Paul's desiring to participate in the grants made by the Fund for 1928 must apply before March 31st to the hon. secretaries of the Fund at 7, Walbrook, E.C. 4 (G.P.O. Box. 465A). Applications will also be considered from convalescent homes which are situated within the above area which take a large proportion of patients from London.

JEWISH HOSPITAL FOR LIVERPOOL.—Negotiations between the Liverpool Jewish Hospital Committee and the existing hospitals for the setting aside of two wards for Jewish patients have failed. It has therefore been decided to found an independent establishment, it having been decided that the setting aside of two wards, with the supply of special food, would be practically as expensive as a separate institution. The new hospital will have 20 beds and a kosher kitchen. An offer to defray the costs has already been received.

BRITISH MEDICAL ASSOCIATION: SCHOLARSHIPS AND GRANTS IN AID OF SCIENTIFIC RESEARCH.—The Council of the B.M.A. will receive applications as follows:—

Research Scholarships.—An Ernest Hart Memorial Scholarship of £200 per annum, and three other research scholarships of £150 per annum are offered to candidates undertaking research in any subject (including State medicine) relating to the causation, prevention or treatment of disease. Each is tenable for one year, commencing on Oct. 1st, 1928. A scholar may be reappointed for not more than two additional terms, may hold a junior appointment at a university, medical school, or hospital, provided its duties do not interfere with his work as a scholar.

Grants.—The Council will also receive applications for grants for the assistance of research in the same directions, preference being given to applicants who propose to investigate problems directly related to practical medicine.

Applications for scholarships and grants should be made on the prescribed form (to be had from the Medical Secretary, B.M.A. House, Tavistock-square, London, W.C. 1) before June 2nd.

THE LANCET: SUBSCRIPTION RATES.

INLAND	One Year	£2	2	0
	Six Months	1	1	0
	Three Months	0	10	6
ABROAD	One Year	2	10	0
	Six Months	1	5	0
	Three Months	0	12	6

Subscriptions not paid in advance are charged out at the published price of 1s. per copy, plus postage. Cheques and P.O.'s (crossed "Westminster Bank, Ltd., Covent Garden Branch") should be made payable to THE MANAGER. THE LANCET Offices, 423, Strand, London, W.C. 2.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

TUESDAY, March 20th.—5.30 P.M., SPECIAL GENERAL MEETING OF FELLOWS. 8.30 P.M., PATHOLOGY. Election of Officers and Council. Communications: Cuthbert Dukes: Some Observations on Pyuria. S. P. Bedson and J. Bland: Cross Immunity Between Vaccinia and Herpes Virus. J. H. Orr and W. A. Campbell: The Action of Welchii Toxin on Red Cells in Vitro. Demonstrations: R. W. Scarff: Carcino-sarcoma of Œsophagus. Myelin Kidney.

THURSDAY.—8.30 P.M., UROLOGY. Discussion on the Treatment of Stricture by Excision. Opener: Mr. Frank Kidd.

FRIDAY.—5 P.M., DISEASE IN CHILDREN. (Cases at 4.30 P.M.) Cases will be shown. 8 P.M., EPIDEMIOLOGY Paper: Dr. C. O. Stallybrass: Season and Disease.

CHELSEA CLINICAL SOCIETY.

TUESDAY, March 20th.—8.30 P.M. (at the Hotel Rembrandt, Thurloe-place, S.W.), Dr. H. Fielden Briggs and Dr. A. Livingstone will open a discussion on Modern Aspects of Dentistry. The meeting will be preceded by dinner at 7.30 P.M.

MEDICO-LEGAL SOCIETY.

THURSDAY, March 22nd.—8.30 P.M. (at 11, Chandos-street, Cavendish-square, W.), Dr. Gerald Slot: Pain in its Medico-legal Aspects, followed by a discussion.

HUNTERIAN SOCIETY.

MONDAY, March 19th.—8.30 P.M.; Dinner at 7.30 P.M. (at Simpson's Restaurant, Bird-in-Hand-court, 77, Poultry, Cheapside), Discussion on Hiccup, to be opened by Dr. R. Hutchison and Sir Farquhar Buzzard.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS, Pall Mall East, S.W.

THURSDAY, March 22nd.—5 P.M., Dr. J. S. Collier: Epilepsy. (Lumleian Lecture (1).)

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.

FRIDAY, March 23rd.—5 P.M., Prof. Sir Arthur Keith: A Review of the Present State of Knowledge Regarding the Innervation and Movements of the Intestine.

ROYAL INSTITUTION, 21, Albemarle-street, W.

THURSDAY, March 22nd.—5.15 P.M., Group-Captain Martin Flack: Physiological Aspects of Flying.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James's Hospital, Ouseley-road, Balham, S.W.

WEDNESDAY, March 21st.—4 P.M. (at the Battersea Mortuary), Sir Bernard Spilsbury: Post-mortem Examination.

NATIONAL HOSPITAL, Queen-square, Bloomsbury.

MONDAY, March 19th.—2 P.M., Dr. Hinds Howell: Out-patient Clinic. 3.30 P.M., Dr. Kinnier Wilson: The Narcolepsies.

TUESDAY, 2 P.M., Dr. Walshe: Out-patient Clinic. 3.30 P.M., Dr. Hinds Howell: Disorders of Sensation (2).

THURSDAY.—2 P.M., Dr. Kinnier Wilson: Out-patient Clinic. 3.30 P.M., Dr. Bailey: Treatment of Pain by Electrical Methods.

FRIDAY.—2 P.M., Dr. Adie: Out-patient Clinic. 3.30 P.M., Sir Percy Sargent: Surgery of the Spinal Cord.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, March 19th, to SATURDAY, March 24th.—FELLOWSHIP OF MEDICINE LECTURE, Medical Society of London, 11, Chandos-street, Cavendish-square, W. Mon., 5 P.M., Prof. Frederick Langmead: Dull and Backward Children.—HOSPITAL FOR DISEASES OF THE THROAT, Golden-square, W. Thurs., 6.30 P.M., Special Clinical Demonstration by Mr. Theodore Just.—ROYAL FREE HOSPITAL, Gray's Inn-road. Thurs., 5 P.M., Special Lecture-demonstration by Prof. Louise McIlroy.—BROMPTON HOSPITAL, S.W. Intensive Course for one week.—HAMPSTEAD GENERAL HOSPITAL, Haverstock Hill, N.W. Practitioner's Course in Medicine, in Surgery, and in the Specialties. Mon. to Fri., 4.30 to 6 P.M.—ROYAL NATIONAL ORTHOPÆDIC HOSPITAL, 234, Great Portland-street, W. All-day Course—Clinics, Operations, Lectures.

Further particulars from the Secretary. Mayfair 2236.

HOSPITAL FOR SICK CHILDREN, Great Ormond-st., W.C.

THURSDAY, March 22nd.—4 P.M., Dr. B. Shires: X Ray Diagnosis; Diseases of the Chest.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith.

MONDAY, March 19th.—10 A.M., Dr. Dowling: Skin Department. 2 P.M., Dr. Trevor Davies: Gynæcological Department. 4.30 P.M., Mr. Addison (Special Lecture): Gastric Ulcer.

TUESDAY.—10 A.M., Medical Registrar: Medical Wards. 2 P.M., Mr. Sinclair: Surgical Out-patients. 2 P.M., Mr. Hamblen Thomas: Throat, Nose, and Ear Department. 4.30 P.M., Dr. Shaw (Special Lecture): Chest Pain.

WEDNESDAY.—10 A.M., Dr. Burnford: Medical Wards. 2 P.M., Mr. Tyrrell Gray: Operations. 2.30 P.M., Mr. Donald Armour: Surgical Wards.

THURSDAY.—10 A.M., Dr. Grainger Stewart: Neurological Department. 2 P.M., Mr. Simmonds: Surgical Out-patients. 3 P.M., Sir Henry Simson: Gynæcological Ward.

FRIDAY.—10 A.M., Dr. Pritchard: Medical Wards. 12 noon, Dr. Ironside: Clinical Demonstration. 2 P.M., Mr. Vlasto: Throat, Nose, and Ear Department.

SATURDAY.—9.30 A.M., Dr. Burnford: Bacterial Therapy Department. 10 A.M., Dr. Owen: Medical Diseases of Children.

Daily, 10 A.M. to 5 P.M., Saturdays, 10 A.M. to 1 P.M., In-patients, Out-patients, Operations, Special Departments, Anæsthetic and Operative Surgery Classes.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham.

MONDAY, March 19th.—2.30 to 5 P.M., Medical, Surgical, and Gynæcological Clinics. Operations.

TUESDAY.—2.30 to 5 P.M., Medical, Surgical, Throat, Nose and Ear Clinics. Operations.

WEDNESDAY.—2.30 to 5 P.M., Medical, Skin, and Eye Clinics. Operations.

THURSDAY.—11.30 A.M., Dental Clinics. 2.30 to 5 P.M., Medical, Surgical, and Ear, Nose, and Throat Clinics. Operations.

FRIDAY.—10.30 A.M., Throat, Nose, and Ear Clinics. 2.30 to 5 P.M., Surgical, Medical, and Children's Diseases Clinics. Operations.

On Wednesday and Friday, at 2.30 P.M., there will also be demonstrations of Skin and Medical (Children) Cases by Dr. W. Jenkins Oliver and Dr. C. E. Sundell respectively.

On Monday and Friday there will also be demonstrations of Surgical and Medical Cases by Mr. Ralph Coyte and Dr. L. R. Yealland respectively.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.

TUESDAY, March 20th.—5 P.M., Dr. H. MacCormac: Malignant Growths of the Skin.

THURSDAY.—5 P.M., Dr. H. G. Adamson: Benign Growths of the Skin.

CENTRAL LONDON THROAT, NOSE AND EAR HOSPITAL, Gray's Inn-road, W.C.

FRIDAY, March 23rd.—4 P.M., Mr. Watkyn-Thomas: The Indications for the Radical Mastoid Operation.

ST. PAUL'S HOSPITAL, Endell-street, W.C.

THURSDAY, March 22nd.—4.30 P.M., Sir Thomas Carey Evans: Stone in the Bladder, with Special Reference to Treatment by Letholapaxy.

PEOPLE'S LEAGUE OF HEALTH.

FRIDAY, March 23rd.—6 P.M. (at the Medical Society's Rooms, 11, Chandos-street, Cavendish-square, W.), Dr. Bassett Jones: Diet in Rheumatic Diseases.

ANCOATS HOSPITAL POST-GRADUATE LECTURES, Mill-street, Manchester.

THURSDAY, March 22nd.—4.15 P.M., Mr. P. G. McEvedy: Visceroptosis.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE COURSE.

TUESDAY, March 20th.—4.15 P.M., Mr. C. Roberts: Treatment of Enlarged Prostate.

FRIDAY.—4.15 P.M., Dr. C. H. Melland: Demonstration of Medical Cases.

Appointments.

FOX, I. S., M.B., Ch.B. Liverp., to be Certifying Surgeon under the Factory and Workshop Acts for the Chester District.

Vacancies.

For further information refer to the advertisement columns.

Artificial Sunlight Clinic, 43, Leicester-square, W.C.—Hon. M.O.

Ashton-under-Lyne District Infirmary.—Third H.S. At rate of £150.

Aylesford, Kent, Hospital, &c., for Tuberculous Ex-Service Men Jun. P. £100.

Barbados Lunatic Asylum.—Asst. Med. Supt. £500.

Cambridge, Addenbrooke's Hospital.—H.S. At rate of £139.

Charing Cross Hospital.—Surg. Reg. £150. Also Asst. Surg

City of London Hospital for Diseases of Heart and Lungs, Victo Park, E.—P. to Out-patients.

Dublin, City Skin and Cancer Hospital.—Res. H.S., &c.

Dumfries, Crichton Royal Mental Hospital.—Clin. Patholog £400.

East London Hospital for Children and Dispensary for Wom Shadwell, E.—Asst. S.

Evelina Hospital, Southwark, S.E.—Med. Radiographer. £1 Also H.S. £120.

Hereford County and City Mental Hospital.—2nd A.M.O. £3

Hong-Kong.—Two Asst. M.O.H.'s Each £740.

Hospital for Sick Children, Great Ormond-street, W.C. 1.—H. H.P., and Asst. Cas. O. Each £50.

Huddersfield County Borough.—Asst. M.O.H. £500.

Indian Medical Service.—Commissions.

Ipswich, East Suffolk and Ipswich Hospital.—H.P. and H. Each at rate of £100.

King Edward Memorial Hospital, Ealing, W.—Res. Asst. H At rate of £100.

Liverpool Heart Hospital.—Hon. Asst. Phys.

Manchester, Victoria Memorial Jewish Hospital.—Sen. H £250.

Middlesex Hospital Medical School, W.—Scholarship in Chem Pathology. £150.

Miller General Hospital for South-East London, Greenwich-r S.E.—Hon. P. to Children's Spec. Dept.

Northampton General Hospital.—Asst. H.S. At rate of £15

Norwich, Norfolk and Norwich Hospital.—Hon. Surg. for I Nose and Throat Dept.

Nottingham General Dispensary.—Res. Lady Surg. £250.

Plymouth, South Devon and East Cornwall Hospital.—H.S., H and Cas. H.S. All at rate of £50.

Prince of Wales's General Hospital, Tottenham, N.—H.S.'s H.P., also Jun. H.S. and Jun. H.P. At rate of £120 and respectively.

Queen's Hospital for Children, Hackney-road, E.—P. in charg Skin Dept.

Rochdale Infirmary and Dispensary.—Jun. H.S. £200.

Royal Free Hospital, Gray's Inn-road, W.C.—Cas. O. Also Res. Anæsthetist.

Shanghai Municipal Council.—Second Asst. Commissione Public Health. Taels 600 per mensem.

South London Hospital for Women, Clapham Common, S.W. H.P. and H.S's. Each at rate of £50.

Sutton, Surrey, Downs Hospital for Children.—Jun. Asst. M £500.

West London Hospital, Hammersmith, W.—Hon. Med. I £100. Also Hon. Anæsthetist.

Willesden General Hospital, Harlesden-road, N.W.—Res. At rate of £100.

Births, Marriages, and Death

BIRTHS.

GLINDON.—On March 5th, at Stoneleigh, Wimbledon, the of Reginald A. Glindon, L.D.S. R.C.S. Eng., of a daugh

HIGGINS.—On March 6th, at "Ringrone," Woking, Surrey, wife of Dr. L. G. Higgins, of a son.

MARRIAGES.

GREY—WILLIAMS.—On Feb. 29th, at St. Mark's, Little Comm Bexhill, John C. P. Grey, M.A., M.B., to Ella Ida second daughter of the late Mr. G. E. Williams, of E Duars, Bengal, India, and of Mrs. G. E. Williams Cooden, Bexhill.

DEATHS.

BROWNE.—On March 7th, Henry William Langley Brow O.B.E., LL.D., M.D., F.R.C.S.E., J.P., at 196, Hagley-r Edgbaston, aged 79.

FERGUSON.—On March 5th, at a nursing home, Edinbu William Haig Ferguson, M.C., M.A. Camb., M.B., Capt R.A.M.C., aged 37.

PASSMORE.—On March 7th, suddenly, of heart failure follow pneumonia, J. Ernest Passmore, M.R.C.S., L.R.C.P. Doddington, March, Cambs, aged 61.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notice Births, Marriages, and Deaths.

FATAL STREET ACCIDENTS IN LONDON.—Scotl Yard has just published, for the first time, details of causes of fatal street accidents in London. The ret which covers the last quarter of 1927, shows that mos the accidents happened to adults, and that children tau "safety first" in schools are so careful in crossing the str that they avoid accidents. In the three months 312 per were killed, only 55 of whom were under 15 years of

Notes, Comments, and Abstracts.

PARALYSIS CURED BY MALARIA.

THE FIRST KNOWN CASE—1850.

By E. W. GUDGER,

BIBLIOGRAPHER AND ASSOCIATE IN ICHTHYOLOGY, AMERICAN MUSEUM OF NATURAL HISTORY, NEW YORK CITY.

DURING the past eight or ten years much interest has been aroused in the malarial treatment of paralysis, and the medical literature abounds in reports of cases where paralytics have been subjected to bites by mosquitoes bearing malarial germs or have been directly infected hypodermically with *Plasmodium malariæ*. The malarial attacks relieve the paralysis and the germs are then destroyed by the use of quinine. Of late rat-bite fever has also been found efficacious, its germs being killed by arsphenamine when their work is done.

I am not a medical man, and have no first-hand knowledge of these matters. Some months ago, however, while checking up the medical bibliographies in search of articles on fishes therein contained, I chanced upon an account of such a phenomenon which was reported 76 years ago. Since this is of great historical interest to medical men, I am reproducing the report herein in the exact form in which it was originally published in the *New Orleans Medical and Surgical Journal* (1850, vii., 41). It is entitled "A Case of Hemiplegia (Cured by an Attack of Fever)," by A. Morris, M.D., of Lowndes County, Ala.

"February, 1848—Enoch Singleton, (64)—Attacked with hemiplegia: the only treatment for the first few days, as far as I could ascertain, was mild laxatives and strychnine. I saw him for the first time ten days after the attack: entire loss of motion on one side of the face; but very little use of either extremity of same side; considerable pain in the occipital, extending front, below the ear of side affected: cups to the nape of the neck; blister to the same region, continue use of the strychnine. Treatment continued for a few days. No improvement. Ordered all medicines stopped, and use cold bath once a day. Improved slowly; able to get about tolerably; face worse; sensation and motion both gone. Continued about the same until August 5th; had a chill; took a small dose of calomel on the 7th; drank very freely of pepper tea, in hopes to keep both disease and chill off. I was called in on evening of same day; found him with much fever, and pulse quick, soft, and intermitting; skin hot and dry; tenderness over the abdomen generally; pain in head; delirium.

℞ Sub. Hyd. x. gr.;
Pulv. Dov. gr. xv. M. No. vi.;

one every two hours until fever subsides, or all are taken; mustard poultice to abdomen; left twenty grains quinine in five powders, to be taken one every four hours; to commence as soon as skin becomes moist.

"Morning of the 8th, 10 o'clock.—No fever; pulse seventy—full and soft; skin moist; hiccough; complains of pain in head; bowels have moved twice; taken all the quinine.

℞ Sulph. Morph. 1–4 gr. immediately.
℞ Gum Assafœtida.
Quinine āā. x. gr. M.

in pill No. vi, one every three hours.

℞ Sulph. Morph. 1 gr. et divid.

in four powders—one every four hours till hiccough ceases.

"9th.—Much worse; hiccough constant; great prostration; pulse soft; no pain; blister two by eight over diaphragm; one, two by six to spine; cups; internally camphor, must and assafœtida.

"10th.—Prostration complete; no pulse at wrist; breathing laborious; hiccough constant; blister drew well; brandy and quinine freely—can't say what amount; camphor poultice to abdomen; spent the day with him; no change until six in the evening; pulse to be felt occasionally; at midnight distinct; skin moist; hiccough continues; 1–4 gr. morphine repeated every half hour.

"Morning of 11th.—Hiccough less frequent; health better; slept about an hour for the first time; quinine and assafœtida 1–2 grains each every three hours; blue pill and aloes āā v. grs.

"12th.—Much better; pulse tolerably full; hiccough continues, but at intervals; recognises me, but unable to articulate; bowels moved twice; gums sore; has been frequently ptyalised before; continue quinine and assafœtida; took a little gruel.

"13th.—Has slept considerably; hiccough continues, but at intervals of an hour or more. From this time took nothing but quinine and assafœtida; improved regularly on, until finally discharged on the 19th, well both of the present attack and the paraplegia—not a vestige remaining: face straight, and in fact all correct; in better health from this time until Nov. 18th, 1849, than for years previous. At the above date he called on me to show a sore arm of some few days' standing; upon examination found he had phlebitis of the left arm; it was much swollen; painful, stiff, and red, in the course of the vein from the shoulder to near the hand; the vein felt like a cord, and full of knots—size of filberts; complains of cold chills running over him constantly for the last twelve hours; constitutional symptoms very trifling, but slight acceleration of pulse; no fever.

℞ 24 grs. calom., vi. grs. opii. M.
Divide in pulv. No. xii.;

one three times a day; keep quiet; use poultices; whiskey and water, or water, as may feel best to arm. Saw him a few days after; three of the knots had gone on to ulceration; opened spontaneously; looked very much like common boils. He is now well."

NATIONAL BABY WEEK COUNCIL.

THE annual general meeting of the Council was held at Carnegie House on March 7th, Mr. E. B. Turner presiding. The Astor Challenge Shield for the great towns (won by Northampton), the William Hardy Challenge Shield for smaller areas (won by Cambridgeshire villages), and other awards for the most successful baby week campaign were presented. After adoption of the report and appointment of honorary officers an address on the Prevention of Maternal Mortality was given by Prof. Louise McIlroy. She referred to two measures which would help in bringing down the maternal death-rate—viz., to extend throughout the country the standard of efficiency in obstetrics now maintained in the voluntary hospitals, and to ensure that every pregnant woman should be examined at least once during the antenatal period. The health of the woman after confinement was as important as the prevention of deaths due to childbirth. Vesico-vaginal fistula, which used to be common, was now so rare that she had not seen a case in the last seven years of constant maternity work. Diminution in prolapse and other disabling postnatal conditions was further evidence of the better conduct of labour. Cases in which pregnancy was complicated by heart disease were now discovered early, owing to antenatal care, and there had been no death during labour or the puerperium among 150 cases with heart complications treated at the Royal Free Hospital. The three essentials in combating a high maternal mortality-rate were, said Prof. McIlroy, these: (1) modern maternity institutions, with special accommodation for antenatal care; (2) proper housing conditions when confinements were to be conducted in the home, with skilled attention from doctor and nurse, and transport facilities when necessary; (3) examination by a doctor of every mother at least once during pregnancy, and once after convalescence in cases where the confinement had been attended by a midwife.

LEAD POISONING FROM SNUFF.

CERTAIN sources of lead poisoning by food are well recognised; lead-containing jam-jars and packings, and the lead-foil used for wrapping tobacco and chocolate, have all been incriminated at various times. Though very few reports have been made of lead being carried by snuff, the structure of the upper respiratory tract is favourable to its absorption. Thus Stadler [1] has described the death of a woman through the habitual use of snuff wrapped in a metal foil containing 89 per cent. lead; the snuff was apt to be moist, and the sample examined contained 1·75 per cent. of the metal. A still more direct hazard is reported by Dr. Joseph Uttal in an account of three recent cases in New York.[2] The patients were all Jews from Eastern Europe, among whom snuff-taking is common, and were all suffering from chronic lead poisoning caused by the same brand of snuff, a cheap product which was adulterated with lead chromate and lead oxide to improve its colour. The lead content of the mixture was actually 3·4 per cent. The commodity was promptly put under embargo, but the Food and Drugs Act in the States does not include snuff in its scope, and it is said that no effort is made to prevent its adulteration.

THE CANCER CAMPAIGN IN MANCHESTER.

THE Manchester Committee on Cancer was founded in 1924 to establish a single and properly coordinated effort for cancer research and investigation. A public appeal for £20,000 was launched in 1925 and about £12,500 was received. A report of the work carried out during the last 12 months has just been published.[3] The University has afforded facility for close coöperation with its laboratory workers and research there has been directed towards the cause of mule-spinner's cancer. In addition, grants have been made to Dr. K. V. Bailey for work on cancer of the cervix, and to Dr. J. B. Duguid for investigations into the incidence of intrathoracic tumours.[4] Two special investigation officers, Dr. Gretta Wardle and Dr. John Murray, were appointed to organise regular and complete records and regular observation of cases of cancer in the city, and the

[1] Schweiz. Med. Woch., 1912, l., 202.
[2] Jour. Amer. Med. Assoc., 1928, xc., 288.
[3] Report of the Manchester Committee on Cancer for the years 1925, 1926, and 1927. Manchester: Henry Blacklock and Co., Ltd.
[4] THE LANCET, 1927, ii., 111.

collection of histological material from hospitals, and to work on the lines of the Minister of Health's inquiry into cancer of the breast. The Committee also undertakes public education on the subject of cancer. In the winter of 1926–27 a course of 12 post-graduate lectures was arranged for medical men, and leaflets have been issued to the public. More funds are urgently needed and the Lancashire, Cheshire, and North Wales Council of the British Empire Cancer Campaign is launching an appeal this month. This Council was formed in November last by a combination of existent Cheshire, Liverpool, and Manchester Committees, and on March 6th Prince Henry, as its President, addressed meetings at Liverpool and Manchester to arouse public interest. Of the total funds subscribed, 5 per cent. will go to the national campaign, whilst the remainder will be used locally for research and treatment.

WHO'S WHO IN THE NURSING WORLD.

Mr. H. E. Smithers, late general manager of the Scientific Press, Ltd., has just brought out a useful little year-book of the nursing profession. In his preface he remarks that it was not until the exigencies of the Great War that nurses invaded the columns of well-known books of reference, and even now there is no publication supplying authoritative details of women who have made a mark or hold high rank in the nursing world. That is the occasion for the issue of the present volume, and although the personal details contained in it are unequal, that is not altogether the fault of the compiler, who expressly asks for help from outside in any later issue. Before coming to the list of names the reader will find more than a hundred pages of tabular matter relating to nursing services, institutions, societies, clubs, journals, and training schools, giving the latest information and arranged conveniently for reference. The general reader will welcome the reproduction of the various medals and badges which nurses and midwives are now entitled to wear and which should distinguish them clearly in the public eye from others masquerading as such. The year-book is published by the H. Edgar Smithers Publishing Company, 139, High Holborn, London, W.C. 1, at the price of 5*s*. It is proposed to issue it yearly in the first week of January.

A SCOTSMAN AT THE RUSSIAN COURT

A NOTE on Sir James Wylie, who gained respect for British medicine a hundred years ago in Russia, was read by Dr. Robert Hutchison, his distant relative, at the Royal Society of Medicine on March 7th. Born at Kincardine in 1758, Wylie studied at Edinburgh and Aberdeen, and went to Russia soon after graduating in 1794. At this time there was almost no organised medical profession in Russia, and for the service of the Court and the nobility, medical talent was mainly drawn from abroad, often from Scotland. Wylie remained for a time undistinguished in the country of his adoption, but eventually made his name by treating one of the Czar's favourites. This person had developed an abscess in the front of the neck, and Wylie—alone of those called in consultation—had the courage to open it. The patient was immediately relieved, and the Czar Paul was so pleased that he at once made the Scotsman a Court physician. Later, when Paul was assassinated, the physician was tactful enough to say that if he had escaped violence he would soon have died of apoplexy, and thus he became a great favourite of the successor, Czar Alexander. Wylie did much work in military surgery in the many wars of the period, at Borodino and elsewhere. He took a leading part in founding the Medico-Chirurgical Academy of St. Petersburg, and in 1818 was made Director of the Army Medical Department. It was then thought a great credit to Britain that one of her sons should have organised civil and military schools of medicine in Russia, and secured for the soldier a care and attention to which he had formerly been a stranger. Wylie was very eccentric and extremely frugal; he was unmarried, and left the whole of his wealth to the Czar, who therewith founded the large military hospital, "The Michael Clinical Hospital of Baronet Wylie" at St. Petersburg. He came to England with the Czar, and was knighted by the Prince Regent, later being made a baronet.

FEES FOR THE EXAMINATION OF CASUALS.

"VAGRANT" writes: I should be glad if any of your readers who are poor-law medical officers would inform me of the arrangements they have made with their respective guardians as to fees for the examination of casuals up to March 31st. The Minister of Health states that "a reasonable fee will be paid," but he does not state the amount. Under the Vagrancy Act these casuals are entitled to leave a workhouse at 9 A.M., and the examination of them at that hour causes considerable dislocation of a morning's programme. I understand that some men are getting 1*s*. per casual, while others are being paid 5*s*. per day. My guardians have asked that the matter be left till March 31st, and it appears to me that I also may be left.

A SPANISH REVIEW OF MEDICAL LITERATURE

As this volume [1] is apparently the first definite attemp made to enable the medical profession in Spain to ava themselves of foreign work, it certainly deserves a welcome Printed on the cover is a statement that it is intended t make its contents representative of "the whole medica efforts of the world." There are about 180 separat articles derived from some 40 publications, nearly half o which are German, and seven of these furnish over 80 items Of the rest 50 are French, a dozen English, four Swiss, an two Scandinavian. The United States, Italy, and the res of the world are not represented at all. It is clear, therefore that the editors will have to enlarge the scope of succeedin numbers considerably if their claim to represent the world medical output is to be substantiated, and no doubt thi will be done as the work expands. It will also need cor siderable modification if it is to be a convenient work o reference for the practitioner. At present there is no mean of finding a particular item without going through the who volume. There is no index and nothing to show that th subjects are grouped, as the groups are not divided or show by headings. Elaborate arrangements are made by means o a key page at the end to help the reader to index his extract when found, but nothing to help him to find them. Th method of printing on paper boards up and down the pag makes the book difficult to handle for quick referenc and but few, we fear, will be found to cut up the who and card index it which seems to be the idea in adoptin this form. The extracts given range pretty well over th whole field of medicine and seem to be adequately tran lated; it is much to be hoped that by expansion and alter tion the editors may bring this publication up to the lev which they announce on the cover.

TREATMENT OF PNEUMONIA BY GLUCOSE.

IN a recent paper [2] Dr. Ralph Lynch and Dr. Bru Webster, of Montreal General Hospital, describe some resul of treating pneumonia with intravenous glucose. It h been shown, they say, that this is the one remedy which w combat myocarditis produced experimentally in dogs b injecting increasing doses of diphtheria toxic. Taken conjunction with the fact that metabolism in pneumonia increased from 20 to 50 per cent. above normal this seem to justify trial of the treatment in human beings. As soo therefore, as the diagnosis was established the patients we given an intravenous injection of 250 c.cm. of 20 per cen glucose saline solution and administration of the sugar w continued once daily—or twice in very serious cases—un 24 hours after the crisis. At the same time glucose soluti flavoured with lime, lemon, or orange, and meat broths, wi a total caloric value of 3600 per diem, were given by t mouth. No very definite conclusions were reached for or 11 cases were treated, but it was thought that the treatme may have been instrumental in saving the life of two of t patients.

[1] Bibliographia Medica Chirurgica, No. 1, bimonthly. Directe Dr. Leon Cardenal y Pujals. Madrid. 1927. Pp. 96. 70 peset yearly. [2] Jour. Canad. Med. Assoc., 1928, xviii., 52.

ROYAL MEDICAL BENEVOLENT FUND.—At the la meeting of the Committee 61 cases were considered a £1057 voted to 51 applicants. Since the beginning the year £2203 has been made in grants to urgent cases distress. The demands for help increase and subscriptio are very urgently needed; they should be sent to he treasurer, Sir Charters Symonds, at 11, Chandos-stre Cavendish-square, W.1. The following are notes on a f of the cases relieved at the last meeting:—

Widow, aged 39, of M.B. Aberd. who died in December, 19 The husband was just getting out of financial difficulties, hav recently started a new practice, when he fell ill and died cancer after a year and a half of illness. The practice was s for £500, all of which went to pay his debts and the expenses the illness. The widow has been left with a boy, aged 14, a a capital of only £45. Voted £24 and case handed to Guild, who will try to find work for the widow.

Widow, aged 54, of M.D. Camb. The husband was annuitant of this Fund. At his death the pension from Eps and from the Freemasons ceased, and his widow has been l absolutely destitute and homeless. She has found work return for board and lodging, which will give her time to l for a salaried post. Voted £26.

Daughter, aged 58, of M.R.C.S. Eng. Has supported her and her delicate sister by literary work since the death of father. In 1926 she fell ill from overwork and her living we Gradually she has sold all she had, and now she and her sis are living in lodgings for which they pay £1 a week. T covers the rent of the room and the food for the two. I all they can afford. Voted £26.

Daughter, aged 65, of L.R.C.P. Edin. Was working a governess in Russia at the time of the Revolution; was for to leave and lost all her savings. She has returned to country at an age when it is impossible to continue her wo Her income in all is only £60 a year. Voted a further £26.

Lumleian Lectures

ON

EPILEPSY.

The Lumleian Lectures, 1928, delivered at the Royal College of Physicians of London

BY JAMES COLLIER, M.D. LOND.,

FELLOW AND COUNCILLOR OF THE COLLEGE; PHYSICIAN AND LECTURER ON MEDICINE, ST. GEORGE'S HOSPITAL.

LECTURE I.

Delivered on March 22nd, 1928.

MR. PRESIDENT AND FELLOWS OF THIS COLLEGE,—I am fully sensible of the high honour which this College has conferred on me in selecting me to give the Lumleian Lectures for this year. I wish to express to you my deep appreciation of the honour and my thanks.

I have chosen as my subject "Epilepsy" because this seems to me an opportune moment to review this symptom-complex in general, for there has been much written of late years both in this country and abroad upon epilepsy and upon closely allied conditions which has brought to light some new clinical facts and many ideas widely divergent from those conceptions as to the nature of epilepsy, which were formerly held to be orthodox. A few of these hypotheses taken at random may here be mentioned as showing that there is a necessity at the present time to make an analysis of the opinions held by authorities and to make the attempt to bring them into line, though they are sometimes widely divergent, and to produce a useful working theory.

There is Foerster's conception that the epileptic attack may have its starting-point, and therefore its locus morbi, in any part of the nervous system, both peripheral or central. There is Oppenheim's conception that epilepsy is a toxicopathic malady with cerebral manifestations. There is the book of Lows and Bond published last year describing epilepsy as "a functional mental illness amenable to psychotherapeutic measures." And while Hartenberg has made his theory widely known that the initial and essential event in every epileptic attack is a cessation and loss of function, all positive phenomena such as hallucinations and convulsions being referred to "release phenomena" occurring in lower levels of the nervous system no longer under control, Gordon Holmes holds stoutly to the cerebral cortex as the site of commencement of epileptic phenomena, to excitation as the physiological process, and to the "gunpowder and match" hypothesis of tradition.

Adie has done excellent work in helping to separate the very real syndromes of "Pyknolepsy" and of "Narcolepsy" from the idiopathic epilepsies, among which they have often remained unrecognised, and contends that the former is a disease "sui generis," and that it has no connexion with, and does not mix with, epilepsy.

Sutherland contends that the attacks which may occur in patients with heart-block and in patients with paroxysmal tachycadia, in which attacks I believe almost every phenomenon known in epilepsy has been described in one case or another, have no connexion with epilepsy whatsoever, but that they are simply the results of lowered blood pressure.

Meanwhile I have been contending for some common pathological factor which will serve to explain the identity of the train of symptoms which make up idiopathic epilepsy, with those which may occur in other disordered bodily states such as uræmia, cholæmia, hypoglycæmia, rickets, &c., and with those which sometimes occur, but with a strange inconstancy, in every kind of lesion in any position in the cerebral hemispheres, even in simple lack of development of the brain.

In all these hypotheses there is some element of truth and of value. My interest in the subject of epilepsy has always been deep, and I am fairly conversant with the clinical manifestations and treatment of this malady as met with in hospital and private practice, but I have no personal experience of the institutional treatment of epilepsy.

In these lectures, which must of necessity reflect my personal conception of epilepsy, gained from careful consideration of clinical facts which I have myself observed, I shall attempt the argument that the clinical phenomena met with in idiopathic epilepsy, in epilepsy from local lesions of the brain, and in the symptomatic epilepsy occurring in disordered metabolic states, in general diseases and intoxications, are identical and are truly indistinguishable. And that those occurring in narcolepsy, migraine, vaso-vagal attacks, idiopathic syncopal attacks, and perhaps also in tetany are phenomena of the same order and are closely allied to those of epilepsy with which they occasionally mix. And that there is one pathological factor which is common to all these conditions, and this is hypothesised as a metabolic dyscrasia, the nature of which is not always quite the same and therefore different clinical syndromes occur in which the prognosis varies.

THE NATURE OF EPILEPSY.

Epilepsy is common in birds and it affects all mammals; the horned cattle rarely, the carnivora and the primates more commonly. In all these epilepsy occurs just as it is met with in man, as an idiopathic disease; or resulting from local lesions of the brain; or symptomatic of general diseases and intoxications. The ætiological factors seem to be the same as in man. Hereditary transmission was well shown in the case of the prize bull recorded by Le Notte, who was an epileptic, for the best specimens of his progeny were invariably epileptics. Cruzel's cow was an epileptic who gave birth to three epileptic calves consecutively, and Otto's epileptic bitch was wont to produce epileptic puppies. Hutyri and Marck lay stress on the teething convulsions of young dogs and young pigs and the development therefrom of established epilepsy, and they point out the major incidence upon rickety animals, and they record puerperal convulsions in horses and cows, in dogs and in pigs. The clinical manifestations are the same with major and minor attacks, local and general attacks; epilepsy occurring exclusively in sleep, as in Haltenbach's cat; presumable auræ from the evidence of terror and cries of distress from the animal immediately prior to the fit, or perhaps he takes to his heels and bolts to fall in a fit after the manner of the classic "cursive" epilepsy in man. There is also "reflex" epilepsy, well known when wounds, especially of the withers, horns and hoofs, have cicatrised; post-epileptic paralysis and the usual train of post-epileptic phenomena; and also status epilepticus. Further, the epilepsy so occurring in animals is ameliorated by the administration of the bromides.

So far as the so-called "idiopathic" epilepsy which thus affects man and the animals is concerned no pathological changes have been found upon which any hypothesis as to the nature of epilepsy can be built up. The findings have been for the most frankly negative, or such changes as have been found in severe and long-standing cases as may be reasonably attributed to long-lasting disorder of function. Attention has therefore turned to the possibility of finding an explanation of epilepsy in some perversion of the chemistry of life—some metabolic dyscrasia which may lead to the presence of substances within the system which act upon the nervous system as do the convulsant poisons and which may further, by depriving the nervous system of its customary activators, cause in some cases a progressive impairment of the higher functions of the nervous system. Experimental investigations upon these lines have been at times suggestive but not very fruitful. Donath thought that he had found the essential convulsant poison in choline, and Mott showed that a watery solution of choline applied to the surface of the brain would produce convulsion and also post-convulsive transient paralysis. Choline, however,

seems to be a product of degeneration within the nervous system and cannot, I think, be found within the body in idiopathic epileptic states. Krainski, doubtless arguing from the occurrence of epileptic phenomena in uræmia, suggested that ammonium carbamate, produced within the system from disorder of metabolism, was the epileptogenous agent, and this is present in the blood of uræmic persons and to a small extent in some epileptics. Hahn, Masser, Nercki, and Pawlow have shown how readily fits may be produced in dogs by the injection of calcium and sodium carbamate and, more recently, Bisgood and his co-workers have put forward the hypothesis that the disturbance of metabolism in epilepsy is a "dis-regulatio ammoniaci" depending upon the disturbance of the function of the parathyroid glands, and J. Madsen following them, claims benefit from a calcium-parathyroid treatment in epilepsy, though he does not consider that epilepsy is a disease of parathyroid origin. He thinks that the parathyroid gland acts as an ortho-regulator as opposed to a dys-regulator of ammonia metabolism, and that a disturbance of ammonia metabolism is a factor in the production of epilepsy.

Some highly interesting and suggestive experiments have been made by Pagniez, Mouzon, and Turpin upon the toxicity of the serum of epileptic patients at the time of the attack. They found that when such serum was injected into the heart or into the carotid artery of animals, a series of convulsions occurred which lasted some half an hour and often ended fatally. No such convulsions occurred in any of the control animals into which healthy serum or the serum from uræmic patients or patients afflicted with general paralysis was injected. These experiments suggest very strongly that the determining agent for the epileptic attack is present in the blood, but only when the attack is about to occur and not at other times.

Bossard has put forward the theory that the immediate cause of the epileptic attack is "anaphylactic shock" from some product of disordered metabolism, and that the local effect thereof is upon part of the cerebrum, while the general effect is shown by the fall in the blood pressure and the leucopenia which he claims invariably and immediately to precede every epileptic attack of any magnitude. This theory is enticing, for it compares the rapidity of onset of the epileptic attack with the well-known dramatic suddenness with which anaphylactic phenomena may occur. It is in line with the well-established hypothesis that puerperal convulsions—which I prefer to call puerperal epilepsy—are caused by anaphylactic occurrences within the brain. It corresponds with the explanation of migraine—a malady very like epilepsy, often associated with epilepsy and sometimes hardly distinguishable from epilepsy, which is current at the present time, that this malady is due to local anaphylaxis in the brain with swelling of the brain and at times local disturbance of function. A similar swelling of the brain at the time of the epileptic attack may well account for the headache and mental dullness which often follows.

Bossard's hypothesis is a suggestion as to how a metabolic dyscrasia or toxic condition of the blood might reasonably act upon the nervous system, if indeed such dyscrasia or toxæmia exist. It is not contradicted by any experimental evidence, and upon it all the clinical manifestations of epilepsy can be intelligibly explained. It is a useful working hypothesis for the present. But by far the most important statement he makes is that the blood pressure falls with the onset of the attack, or rather that one of the essential features of the epileptic attack is a fall of blood pressure. If this is true it is of far-reaching importance, for it does away with the hard-and-fast line of separation between epileptic manifestations and syncopal attacks which has been laid down by many authorities, including Gowers, who argued that there was no conspicuous fall of blood pressure in an attack of epilepsy, and who stated that he had had his fingers upon the pulse many times at the moment of attack and had observed neither alteration of rate or tension. I shall have occasion to remark later on that such a strict separation between syncopal attacks and epileptic attacks is clinically difficult from several points of view and that in my opinion it is rather artificial than real.

Such an initial fall of blood pressure, if proved to be constant in the epileptic attack, would, I hope, serve to further rid our minds of that explanation in pathology for so many ill-understood diseases—arterial spasm. There is certainly pallor of the face with the onset of many epileptic attacks, and pallor of the brain has been noted by several observers. Indeed, Foerster makes the wonderful statement that he has on one hundred occasions witnessed an epileptic fit upon the operating table when he has had the brain exposed, and that he had noticed the sudden pallor of the brain with the onset on every occasion. He was, of course, arguing for arterial spasm.

Following upon this work, attempts have been made to desensitise the epileptic patient between his attacks by the injections of his own blood taken at the time of the attack, and though good results have been claimed, we have not been able to confirm them at Queen-square. The well-known tendency for epileptic fits to disappear for the time being during acute infections and after the injection of foreign serums and proteins, led to the researches of Tine and Santanoise, who have shown the existence in their epileptic patients of alternating periods of sensitivity and immunity. Protein therapy has consequently been used for the treatment of epilepsy by many hands without any convincing result.

The endocrine organs have been searched histologically with great care in epileptics by Schou and Susman with negative results. On the clinical side one finds the occurrence of epilepsy in some of the cases of pituitary disease, both in the acromegalic type and in the Fröhlich type, but especially, I think, in those presenting arrest of bodily growth in childhood which correspond with Lorrain's type of infantilism.

In some cases in which thyroidectomy has been performed epilepsy has been observed usually associated with tetany. In others there have been severe attacks of tetany with loss of consciousness and incontinence of sphincters, suggesting a blend of epilepsy and tetany. In the case of a middle-aged woman admitted under my care at the National Hospital as a case of epilepsy, a very extensive thyroidectomy had been performed; there were no signs of myxœdema. There were very typical attacks of tetany, but there were also attacks in which loss of consciousness and incontinence occurred which were very like attacks of "tonic" epilepsy. A calcium and parathyroid treatment brought about the disappearance of the symptoms in this patient. These events are in line with the experiments of Horsley with panthyroid extirpation in monkeys and with the parathyroid removals of Biedl, in which both tetany and epileptic manifestations resulted. The absence of the parathyroid element is now held to be responsible for these symptoms, which, so far as I am aware, have never been observed in any case of myxœdema.

Metabolic Disturbance as a Cause of Epilepsy.

I submit that there are many clinical features of epilepsy which argue strongly in favour of a metabolic disturbance as the essential cause for epilepsy.

1. In the first place there is the very common incidence in early infancy when the personal metabolism may not as yet be strongly organised, nor the developing brain highly stable, and the very important influence which so definite a metabolic disorder as rickets has, in determining the incidence of epilepsy. All great authorities are agreed that infantile convulsions often associated with rickets are the most important of all the known antecedents in idiopathic epilepsy which is personal and not inherited. There is, again, the incidence at the time of puberty when important metabolic changes may be presumed to

occur, and again, a small incidence in the degenerative period of life when metabolic regulation may be failing. Then there is the periodicity of epilepsy with its often amazing regularity, the attacks occurring always at night or at regular intervals, or only at the menstrual epochs. And, more strikingly, those cases in which batches of fits at long intervals occur—sometimes many in a day—and during the long intervals nothing will induce the patient to have a fit. Surely such periodicity is more reasonably explained on the grounds of a metabolic dyscrasia—now present, now absent, than upon any other hypothesis which has been advanced.

2. It is usual for the epileptic woman to have complete immunity from the attacks during pregnancy, and I submit that this fact can only be explained on the basis of the correction of a faulty metabolism in the mother by that of her fœtus. The cessation of epileptic attacks during pregnancy is not confined to idiopathic epilepsy, but it has occurred under my observation in many cases of epilepsy from local organic disease of the brain, and I have also seen several cases in which the epileptic manifestations of local lesions of the brain have appeared directly after the termination of pregnancy, as if the pregnancy had held these symptoms back. I wish particularly to emphasise this point, for I shall attempt to argue later on that there is metabolic dyscrasia present as a second factor in every case of organic lesion of the brain which presents epileptic manifestations. On the other hand, it is common knowledge that epilepsy may occur only during pregnancy and with repeated pregnancies, and this form, I think, surely belongs to the class of eclampsias due to anaphylaxis from fœtal products.

3. Status epilepticus is, in my opinion, only explicable on the grounds of an acute autotoxic process. It closely resembles experimental convulsions from the exhibition of convulsant poisons, and it is very closely akin to the convulsions of uræmia and of eclampsia. It is the commonest event by which epilepsy in itself causes death. It arises sometimes in an epileptic subject who has had no fits for a very long time, and whose cerebral condition might therefore be deemed to be more stable than in the epileptic who has frequent fits. Sometimes over-exertion is the immediate exciting cause, sometimes the discontinuance of medicinal treatment by the bromides or other remedies. Sometimes no exciting cause can be attributed. The attacks begin and recur with increasing frequency and severity in spite of the apparent complete abrogation of cerebral function, and death is a common result, notwithstanding any treatment that may be adopted. Now I have in several cases of status epilepticus arrested the convulsions, restored the patient to consciousness and secured adequate nutrition, and yet death has occurred in a few days from exhaustion with a rising temperature and pulse-rate. It is most important to bear in mind that in these cases the autopsy showed the most acute and intense fatty degeneration in the cardiac muscle. So far as I am aware this change in the heart muscle is the invariable finding in status epilepticus, and this was emphasised by the late Sir Frederick Mott, who told me that in his rich experience he had never seen an autopsy upon any case of status epilepticus in which this condition of the heart muscle was not conspicuous. Such fatty degeneration must surely be the result of an acute toxæmia, which is at the same time the cause of the external manifestations of status epilepticus. It cannot be ascribed to an effect of continued convulsion and lack of nourishment, for the amount of energy expended from convulsion in status epilepticus in no way exceeds that put out by a labourer in a day's work, and is incomparably less than that which may be exhibited by an acute maniac, without sleep and without food, and without signs of myocardial disturbance even after many days.

It seems to me that there is another condition occurring in epilepsy to which the term "status epilepticus" should justly be applied. I have met with it only in epileptics who show mental deterioration. The patient, without cause, and perhaps after signs of increased mental aberration, becomes dull, ceases to take food, and lapses into coma with terminal pyrexia which ends fatally. This in reality is status epilepticus without the convulsions, and if the convulsive form be comparable with uræmic convulsions, then this second variety may be reasonably compared with uræmic coma.

4. It is a remarkable fact that the habitual epileptic person shows immunity from so many of the common diseases which are the plagues of the world—such as the specific fevers of childhood, tuberculosis, pneumonia, and carcinoma. And the epileptic shows this immunity in common with the subjects of infantilism, or of idiocy or of cerebral diplegia, in all of which diseases we have grounds for believing that a perversion of bodily metabolism is the essential cause. And this fact favours the argument that in the epileptic subject metabolic perversion is a fundamentally important factor. I suggest that the bodily peculiarities and the somewhat aberrant mental make-up which is seen in some habitual epileptic persons is the expression of this same metabolic error, and that the mental aberration, mental deterioration, and terminal dementia are results of the same process, either by way of deprivation of activators necessary for the maintenance of cerebral function or long-continued poisoning. The prodromal symptoms of the epileptic seizure—sometimes in the way of exaltation, excitement, and restlessness, sometimes expressed in headache, lethargy, and feelings of bodily illness—are surely the indications of some general bodily change which culminates in the paroxysm.

Mental deterioration, mental aberration, and terminal dementia occur only in some of the cases of epilepsy. In others the highest degree of mental attainments may be acquired and preserved throughout a long life. Nor does the condition of mentality bear any constant relation to the frequency or the severity of the epileptic manifestations. There is one clinical variety of epilepsy, for example, pyknolepsy, in which, though the attacks are of very frequent occurrence for years together, yet mental deterioration is said never to occur. I have seen many examples of this condition. On the other hand, there are many cases in which epileptic attacks, though mild and not very frequent, are followed by progressive and irrecoverable mental deterioration. Clearly, then, the epileptic occurrences are not responsible for the mental deterioration, but they must be the result of some concomitant metabolic fault akin to that which is supposed to give rise to the progressive mental deterioration in dementia præcox. It is an important fact that epilepsy is of common occurrence in dementia præcox.

Organic Epilepsy.

The occurrence of epilepsy in connexion with every conceivable variety of local disease of the cerebral hemispheres is a difficulty in the conception of a fundamental factor for epilepsy in a disordered metabolic state. This organic epilepsy has for the most been considered as something quite separate and apart from idiopathic epilepsy, and as having a different clinical aspect and ætiology, and requiring a separate description, and as amenable to surgical methods of treatment. This opinion, which is still widely held, has, I am sure, impeded the progress of our knowledge of epilepsy, for there is in reality no difference whatsoever between the clinical manifestations of epilepsy resulting from organic disease of the nervous system and those of idiopathic epilepsy. It is traditional at the National Hospital that when you, Mr. President, first took charge of the out-patient department there you discovered in a very short space of time a considerable number of cases of organic disease of the brain among the patients who had been passed by your predecessors as cases of idiopathic epilepsy. I suggest that you did not do this from any peculiar nature in the attacks which these patients had, but from your skill

in the use of the ophthalmoscope. I have myself personally observed every known feature characteristic of idiopathic epilepsy in cases of organic disease of the brain. I may here mention three examples of the more rare events. First, minor attacks. I have seen the most characteristic attacks of "petit mal" with momentary pallor and loss of consciousness instantly regained commence for the first time and recur frequently in the course of cerebral tumour, and in one case where the tumour was successfully removed from the right temporal region the attacks permanently ceased. Secondly, "myoclonus epilepsy" or "epilepsia continuans." This somewhat rare condition has been described as an idiopathic epilepsy with myoclonus superadded, and it has been called a disease "sui generis." Muskens has quite recently claimed that the myoclonus is not a very uncommon manifestation of idiopathic epilepsy, and with this opinion I entirely agree. The following case emphasises the occurrence of myoclonus epilepsy as symptomatic of a local lesion of the brain. There is at the moment of writing a young woman under my care at the National Hospital, who several months ago commenced to have local epileptic attacks, without impairment of consciousness, in the right foot and leg. Thereafter the right leg has developed a spastic paralysis which has increased to the extent that she can hardly walk. The usual signs of pyramidal tract involvement are present. The attacks occur only in the night. But all day long the muscles of the right leg are twitching just as one may see the muscles of a patient with uræmia twitch. The twitching does not extend above the iliac crest. Now and again the muscular contractions become more massive and the limb moves with the short shock-like movements which characterise myoclonus. The presence of an organic lesion of the brain, probably a neoplasm, is incontrovertible in this case, and that this lesion is responsible for the local myoclonus-epilepsy is also incontrovertible. So far as I am aware no case of this nature has hitherto been recorded.

Status epilepticus has not usually been included in the descriptions of the manifestations of organic epilepsy, if I may exclude the repeated convulsions which may occur in acute encephalitis and in general paralysis. But it may certainly result from local lesion of the brain. Quite recently a patient was admitted to the National Hospital as a case of severe idiopathic epilepsy of two years' duration. Meticulous and repeated examination did not reveal any sign suggesting that an organic lesion was present. The fits increased in frequency, and during the last 12 hours he had 60 fits, and there was no return of consciousness between the attacks, so that he was indeed in a condition of status epilepticus. At the autopsy a frontal tumour was found.

On the other hand, the peculiarity in the epileptic attacks which have been hitherto claimed as characteristic of organic disease of the brain, such as local commencement of hallucination or convulsion, slow spread or restriction of the disturbance to one region, with retention of consciousness are all common features of idiopathic epilepsy, notwithstanding the confident statements to the contrary which have recently been made by J. P. Martin and others. A majority of idiopathic epileptics have local fits at some other time or other. Some have occasionally the local aura which is not followed by the usual attack, others have occasional local convulsion, while in a few local attacks predominate.

As an example of the last condition, a child who was under my observation in the out-patient room at Queen-square for many years, showed us, on one occasion or another, during the few moments of her presence for examination, beautiful restricted attacks of Jacksonian convulsion, in one or the other side of the tongue, in either side of the face, in either shoulder or in either hand, in either side of the abdomen, and in either leg, both upper and lower. There was never any impairment of consciousness, and only on rare occasions had the convulsion become general. One gained a greater experience of local epilepsy from this one case that one would do from an averag 200 cases of cerebral tumour. This patient recovere and is now the mother of a growing-up family.

I have seen every conceivable variety of loc attack, both sensory and motor, to occur in idiopath epilepsy, and I am in the habit of teaching, perha too dogmatically, that the commonest cause Jacksonian epilepsy is idiopathic epilepsy, but th actually is my individual experience. I have former years assisted at operations for craniectom in cases of Jacksonian epilepsy where nothing wha ever abnormal has been found, and when subsequent the attacks ceased for ever, as often happens in loc idiopathic epilepsy, either spontaneously or durin the administration of the usual remedies, the case w claimed as a cure by surgical measures, though wh the surgeon did besides introducing a few adhesio and a little scar tissue escaped me.

Epilepsy results only in a small minority of organ lesions of the cerebrum, whatever may be the natu of the lesion and whatever may be the situation that lesion in the brain. With some lesions it very rare indeed. In disseminate sclerosis, f example, though lesions of the brain, and very oft of the cortex, are common, epilepsy does n occur in more than 1 in 500 of the cases. Wi wounds of the brain the subsequent inciden of epilepsy is in about 4 per cent. of the case according to the statistics of the Great War. cases of cerebral tumour the incidence is less tha 10 per cent., even with the rapidly growing end theliomata that press into the surface and whi seem to be the most epileptogenous of the lesions with a localisation in the uncinate lobe, which seen to be the most susceptible region.

There is no lesion of the brain that will certain produce epilepsy, whatever be its nature or positio There is hardly a lesion of the brain of any natu which has not produced epilepsy. Of ten tumou of the brain identical in nature, size, rate of growt and position, one produces epilepsy early and co tinuously, while the other nine do not. Of 20 simil wounds of the brain one is followed by epilepsy ar the others are not so followed.

Obviously, therefore, it is not the lesion of t brain alone which is responsible for the epileps There must be some other factor which, together wi the brain lesion, can produce epilepsy. This seco factor has been sought for in some peculiar irritati quality of the lesion, some weird potentiality f setting a train of gunpowder on fire, which, I submi is picturesque enough, but too much derived from t effect of a pair of faradic electrodes upon the cerebr cortex. It has been sought in adhesions and tiss tractions and dislocations which might be remedi by surgical measures. But we have such goo knowledge of the extraordinary degrees of tiss dislocation, traction and adhesion, which the brain w put up with without any epilepsy or, indeed, witho any disturbance of its function at all, as in hydr cephalus, injuries to the brain, and adhesive meni gitis. It has also been sought in the local liberati of poisons of a convulsant nature—choline, f example—from the decaying nerve elements in t region of the lesion. But epilepsy is no more consta in cases where we may presume such decay to occurring as with others in which the likelihood decay is remote—cerebral agenesia, for examp and in such diseases as progressive muscular atroph in which we know well that progressive decay the elements of the ascending frontal convoluti is proceeding rapidly, epilepsy is unknown. Wh listening to Sir Percy Sargent's presidential addre upon the causation of epilepsy from local lesions the brain a few years ago, I could not help feeli that he was very ably saying the very last word support of an utterly lost cause.

I submit for your consideration that the seco factor which we are seeking for as the cause of epilep from local lesion, since the local lesion of itself seer impotent to produce epilepsy, is in reality the sam disorder of metabolism which I have theorised as t

fundamental cause of idiopathic epilepsy, but existing in minor degree, so that there are no spontaneous outbursts until the local lesion of the brain is added—a sort of potentiality of chemical make-up which favours the occurrence of epilepsy, great in those who are frank epileptics, less but present in varying degrees in those who develop epilepsy from local lesions of the brain, or in connexion with general diseases and intoxications, or in connexion with such cardiac derangements as heart-block and paroxysmal tachycardia, and absent in a great many who will not, however provoked, show epileptic manifestations.

This idea of the unity in cause of idiopathic epilepsy, organic epilepsy, and symptomatic epilepsy which I have thought about for some years has recently received some support in the experimental work of Dandy and Elman at the Johns Hopkins Institute at Baltimore, who set out to determine whether localised injury of the brain rendered cats more susceptible to toxic convulsions and whether the site of injury had any important bearing upon the nature of the convulsion so produced. The injuries employed were local cortical and subcortical extirpations, simple incisions into the convolutions, and the embedding of small foreign bodies locally beneath the cortex. Several weeks later, when the wounds had healed and the animals were in perfect health, a 10 per cent. solution of wormwood oil was introduced into the stomach by tube in exact doses. These authors found that one-third to one-seventh of the dose of the wormwood required to produce convulsion in normal cats would excite attacks in the animals which had a lesion of the brain. Injuries to the central convolutions were found to be much more potent in rendering the cats susceptible to the absinthe convulsions than were lesions of the occipital lobes, yet lesions in any part of the cortex were in some degree effective. A minimal convulsive dose produced unilateral convulsion corresponding with the side of the brain injured and without loss of consciousness, and when they had the luck to hit on exactly the right minimal dose the convulsion remained strictly local. With the small doses necessary to produce convulsions in the animals with cerebral lesions, the general absinthe effect of restlessness and irritability working up to the convulsions and which was always present in the normal cats, was never observed. These experiments show that a local lesion of the brain not in itself epileptogenous, can in conjunction with a disturbing agent in the general bodily circulation, again not in sufficient dose to be epileptogenous, produce both local and general epilepsy. And that is the proposition which I have placed before you as a possible explanation of epilepsy as occurring from local disease of the brain.

Symptomatic Epilepsy.

May I now draw attention to those happenings, usually called convulsions, which occur in so many conditions of bodily disease, from the convulsions of infancy and those which may usher in acute infections and which seem interchangeable with the condition of "rigor," to the nervous manifestations of uræmia, eclampsia, and tetany, premising on high authority that there is not one example of such convulsion which has not continued in some recorded case into an established epilepsy. With these convulsions you will find, on occasion—I will not say commonly—most, if not all, of the clinical phenomena which characterise epilepsy; major attacks and minor attacks, local attacks and general attacks, auræ, sensory and motor fits, and post-convulsive paralysis. Sometimes the clinical picture *qua* epileptic manifestations is indistinguishable from epilepsy proper. How many times has a patient been treated for years, and with success, as an occasional epileptic, when the first appearance of hæmaturia has led to a correct diagnosis of cystic disease of the kidneys. At least ten times in the O.P. room at Queen-square has a child been brought to me with a story that would have passed as characteristic of idiopathic epilepsy, when either the anæmic appearance of the patient or a finger placed upon the pulse or a look at the fundus oculi has changed the diagnosis to one of Bradford's kidney.

There is at the present time in one of my beds at Queen-square a man who has had epilepsy for many years with much mental deterioration. His fits are general and occur but rarely—they never have been frequent. His muscles twitch continuously night and day in a manner characteristic of the uræmic state. There is no uræmia, but the phenomenon is identical and the cause must be nearly allied. It is called "epilepsia continuans." Similar twitching of muscles as an occasional phenomenon is, however, very common in epileptics. It may herald an oncoming attack or may occur without reference to the other epileptic symptoms.

I submit that since a train of phenomena sometimes precisely, and at other times closely resembling those of epilepsy, is well known to occur from disordered nutritional states, interference with important organs of metabolism and from infections and intoxications, all of which are productive of metabolic dyscrasia, it is a fair argument that all epilepsy may be similarly caused and that symptomatic convulsions and other epilepsy-like manifestations should be included in descriptions of epilepsy, the more so because any of the latter may persist after its apparent cause has disappeared as an established epilepsy.

THE RATIONAL USE OF DIGITALIS.

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Authorities agree that digitalis is a valuable drug in the treatment of disorders of the heart, but much confusion and contradiction exist as to its actions and the type of case in which it should be employed. Yet in all cases there is one constant factor, and that is the action of the drug; this does not change. The varying results obtained from its use are mere expressions of the fact that different conditions obtain in the various cases, the drug-action being a constant. A study of these varying results illuminates the subject and clearly indicates the rational use of the drug.

Without some conception of the laws governing the living cell all therapeutic measures are empirical. It was to this problem of the living cell that Sir James Mackenzie gave the last few years of his life. He evolved the following simple conception[1] of cell activity, based upon a study of the less complex biological forms. He considered that the vital process in a living cell is that of the alternate discharge and renewal of its energy. This principle applies to all cells, whether they be highly specialised such as the polygonal cells of the liver, or humble supporters in connective tissue. The characteristics of the cell are fixed, and no agent can effect a change in them. On the other hand, the rate of activity of a cell, or the process of discharging and renewing its energy, is variable and liable to influence from without. The activity of a cell is coördinated with somatic requirements through specialised paths known to us as nerves, and the stimuli transmitted by nerves act by either delaying or quickening the process of recovery in the cell. Stimuli are identical and in no way specific, nor can they interfere with the characteristics of the cell they control. Drugs, in a like manner, act only by delaying or quickening the process of recovery in the cell.

The Heart.

In the heart there are three elements concerned in the rhythmic cycle—the nerves, the genetic system, and the myocardium. The genetic system is a term applied by Mackenzie to the conducting

[1] Sir James Mackenzie: Diseases of the Heart, fourth edition.

system, to stress the fact that this system does not only conduct, but also originates stimuli (see figure). Rhythm is an inherent property of this tissue, even when excised. The genetic system begins near the great veins at a node known as the sino-auricular node. This is connected with a similar node in the junctional tissue known as the auriculo-ventricular node. Thence the system is continued as the bundle of His, which runs in the septum of the ventricles, eventually losing itself in the cardiac muscle-fibres. The sino-auricular node is the most sensitive part of the genetic system and sets the pace in the normal heart. To a lesser degree the auriculo-ventricular node possesses the same faculty, and when the continuity of the system is interrupted between these two nodes the auriculo-ventricular node originates the stimuli. When a lesion lies distal to the auriculo-ventricular node the bundle of His originates the contraction. Such a condition is known clinically as complete heart-block. The genetic system may be termed automatic, but there are two controls which coördinate the work of the heart with the requirements of the body. These controls—the sympathetic and the vagus nerves—have an opposite action; the sympathetic is an accelerator and the vagus a depressor. They are connected to both the nodes, but the more highly specialised sino-auricular node is the main channel through which the stimuli pass. When the body is in exercise, the heart quickens in response to the stimuli through the sympathetic affecting this node. In sleep the heart is slowed by a similar action operating through the vagus. The third element concerned in maintenance of the rhythmic cycle of the heart—the myocardium—is the most important. The myocardium differs from the other muscle structures in that there is a continuity between its fibres, making it thereby more or less one unit. The association of the terminals of the genetic system with the myocardium is much more intimate than that found in any nerve-muscle system elsewhere in the body.

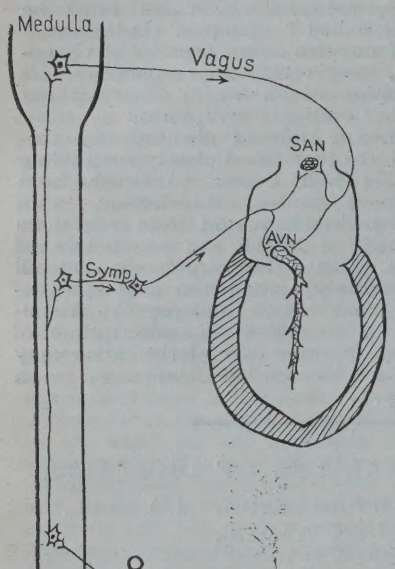

Diagram showing innervation of heart (modified from Sir James Mackenzie). Symp. = sympathetic fibres. SAN = sino-auricular node. AVN = auriculo-ventricular node.

Such are the elements concerned in the cardiac cycle. The rational use of any drug can only follow from a study of these elements in their interdependence in producing a flawless organ.

Digitalis.

The action of this drug has been described as multiple. Some text-books state that: (1) it slows the heart; (2) lengthens diastole; (3) acts directly on muscle-fibres and strengthens their contractions; and (4) increases peripheral resistance and thereby raises the blood pressure. Even a diuretic action has been attributed to the drug.

A second school of thought considers that the action is singular and that the drug acts by virtue of its property of stimulating the vagus. This, I think, is correct, since all the effects of the drug can be traced to this simple action. Stimulation of the vagus slows the heart and this increases the force of the next beat, the circulation moves more forcibly, and the blood pressure rises. The results of this increased efficiency are felt in all organs, and direct evidence is seen in the increased secretion of urine and the diminution of œdema. It is significant that clinically the presence of œdema is essential to the diuretic action. Strong support is obtained experimentally for this hypothesis. When the vagi are divided, no action of digitalis is obtained. The site of action is presumably the central termination of the nerve, for atropine, which paralyses the vagus, does not prevent the slowing effect of digitalis. It is interesting to note that division of both nerves does not affect the atropine action, and it follows that the site of action of the latter drug differs from that of digitalis in that it lies at the peripheral end of the nerve.

If the sole action of digitalis is to slow the heart, it follows that there is one indication only for the use of digitalis and that is in rapid hearts. I use the words rapid hearts in preference to tachycardia, for that suggests to many a standard of rapidity in the vicinity of 150 or more beats to the minute. At first sight this statement may appear to restrict unduly the field of therapeutics for digitalis, but a second's thought will make it apparent that the field is extremely wide. Heart failure with a slow heart is not an uncommon occurrence, but is usually beyond the reach of any drug. To administer digitalis in such a case is to invite a further degree of heart-block. Bradycardia is generally recognised as a strong contra-indication to the use of digitalis. In confining the use of digitalis to an action on the heart-rate no restriction is implied on hearts showing arrhythmia, but no direct action on the irregularity is likely to occur except where this is due to vagal influence. Where the disappearance of an irregularity which has its origin distal to the vagus-ending follows the use of digitalis the result is probably due to the improved cardiac circulation in the heart itself.

Rapid Hearts.

Rapid hearts can be considered in two groups—where the origin of the rapidity is outside the heart and where it arises within the heart. Extracardial rapidity usually arises from stimuli conveyed by the sympathetic. Examples of this group are to be found in febrile conditions and constitutional disorders. Heat itself, when applied to any part of the genetic system, even when the latter is excised, promptly increases the rate of contraction. The rapid heart in a fever may be due to this, but more probably it is due to central stimulation of the sympathetic. Fever means increased metabolism, which demands a more rapid flow of blood through all organs. In such cases the slowing action of digitalis is not obtainable. It would require an extremely potent drug-action to negative such a persistent stimulation of the sympathetic as that which occurs in a fever. It is common to give digitalis in pneumonia, but the typical digitalis effect is rarely if ever obtained. Certain authorities declare that it does not act at all, and it is certainly difficult to find any concrete evidence in support of so widespread a practice. Graves's disease provides another example of extracardial rapidity. Practically the whole of the signs in this condition indicate stimulation of the sympathetic. Again the failure of digitalis to effect any definite change in the heart condition is noteworthy, and is generally recognised. Further observations on this extracardial group of "rapid hearts" requires to be made before the value of digitalis can be rightly assessed. In the light of our present knowledge it would appear that the extra stimulation of the sympathetic in response to abnormal demands of the body—i.e., increased metabolism—is more powerful than the counteraction of any drug we possess.

The essential feature in the other group is the excessive vital activity in the cells of the genetic

system, especially in the nodes which originate the stimuli. On theoretical grounds a rapidity due to increased vital activity in the genetic system should respond well to any drug which can produce a decrease in this vital activity. This may be accomplished by action directly on the cells in situ or by stimulation of the vagus, the physiological function of which is to delay the process of recovery in the cells of the nodes. In digitalis we possess such a drug, and its rational use depends upon the recognition of these two groups of rapid hearts. In the extracardial type digitalis is of little use, probably because the rapidity results from a strong physiological stimulus of an essential nature. In the intracardial type the rapidity arises from a local cause. In this group neither the vagus nor the sympathetic is involved directly, and both may be said to be open to occupation by any drug possessing a specific action.

During an afebrile period the toxic hearts of rheumatic infection frequently exhibit a pulse-rate of 110–120 and a regular action. The cause of the rapidity lies within the heart. Dr. G. A. Sutherland [2] was the first to direct attention to the excellent results obtained from digitalis in these cases. In six cases the pulse-rate fell from 125 to 85 in three days. The benefit which arises from saving 40 beats a minute over a few weeks in a toxic heart can hardly be over-estimated. The action of the drug appears to be a simple depression of the sino-auricular node, and to a lesser extent probably the auriculo-ventricular node.

Auricular fibrillation can be divided into two groups—the slow and the rapid forms. In the slow form there is no indication for interference with digitalis. When the irregularity has been established for some time and the pulse-rate remains in the vicinity of 80, signs of circulatory deficiency may be entirely absent, and the patient may lead a useful life for years. On the other hand, a deficient circulation accompanying a slow pulse indicates a marked degree of myocardial degeneration, and the prognosis is usually extremely grave. Digitalis can bring no relief. The essential feature of auricular fibrillation is the absence of the normal sinus rhythm. This is replaced by multiple stimuli which are conducted by abnormal paths. The result is that the auriculo-ventricular node becomes subject to a bombardment of stimuli in such rapid succession that only a few stimuli are effective and the ventricles contract in response to these. Where the node is very sensitive the pulse-rate will be very rapid, and the recovery period in the cycle of ventricular contraction will be greatly reduced. Under such conditions myocardial exhaustion is only a question of time, and digitalis is of extreme value; the sensitivity of the node is greatly reduced and more stimuli are blocked. The effect resembles the conversion of a stopping train, which permits entry at every station, into a long-distance train which permits entry only at long intervals. The rate of the ventricles is reduced, but the auricles continue to fibrillate. Occasionally the fibrillation ceases; this is not due to any direct action of the drug, but is probably attributable to the better circulation in the myocardium. In this respect it is well to recall the fact that the myocardial circulation is at a maximum during diastole.[3]

Digitalisation of the Heart.

This term is employed to express the condition present in the heart when the full effect of the drug is produced. The amount of drug required to effect this is known, with variations in individual cases. Until digitalisation is established benefit is not obtained. Unfortunately the margin between toxicity and therapeutic action is small, and herein lies one of the chief difficulties of the effective use of the drug in general practice. The difficulty is real but, with regular supervision, it is not insurmountable. American writers have asserted that 15 c.cm. (3 drachms) of the tincture per 100 lb. of body-weight is sufficient to effect digitalisation. To maintain this about 20 minims a day is required, for this figure represents the daily destruction and excretion of the drug by the tissues of the body. Thus it is possible to employ relatively large doses of the drug, based on body-weight, until the required concentration is reached. Digitalis is completely absorbed by the stomach in six hours, and it is rational to give the drug four times a day until the therapeutic action is reached. Massive dosage is seldom required, nor is the intravenous route, as with strophanthin. Intravenous administration should be reserved for cases of great emergency, for the early symptoms of toxicity—i.e., headache and vomiting—which accompany oral administration are lacking. The procedure of digitalising the heart is as follows. A fresh tincture should be employed or, better still, the pure active principle such as digitalin (that made by Nativelle is very reliable). In adults it is quite safe to give a drachm of the tincture daily for two days, then 45 minims a day for the next two days, by which time the required concentration of the drug is not far distant. At this stage great care must be taken and constant inquiry into the patient's well-being should be made. The drug should be continued in doses of ℿx thrice daily till the pulse-rate falls to about 70 or 80 beats per minute, and before each administration inquiry should be made for toxic symptoms. Not infrequently the pulse will be found to assume a peculiar rhythm, which at first may cause alarm. This is due to the introduction of extrasystoles which may occur every third beat or oftener. The effect is coupling or tripling of the beats. Such a phenomenon indicates that the drug should be discontinued for the time being. As a rule the pulse becomes quite regular in a day or two.

Failure to effect digitalisation arises in many cases from a lack of appreciation of the fundamental action of the drug. An essential preliminary is the absence of undue stimulation of the sympathetic. Many subjects react with extreme facility to slight excitement, and the heart-rate increases through sympathetic stimulation. Simple isolation in a quiet room is usually effective. If the pulse-rate remains rapid despite this precaution, a thorough examination of the patient may lead to the discovery of some metabolic cause for the rapid heart. The case then falls into the group of extracardial rapid hearts, in which digitalis is of little avail.

When the heart is digitalised the precise dose required to maintain the control must be found. In the adult 20 minims of the tincture a day is usually sufficient and, with this amount, the slowing effect can be maintained indefinitely. In the typical case of failure of the circulation in the absence of fever the benefits quickly become apparent. The distressed breathing disappears, œdema subsides, and the urine increases in quantity, and the whole outlook of the patient returns to a happier state. The digitalised heart is of great interest. The site of maximum stimulation appears to be the auriculo-ventricular node, and this in effect amounts to a partial block to stimuli arriving from the auricles. The normal reciprocal innervation by the sympathetic and vagus is suspended and we have a heart dominated by the vagal side. In other words, the heart is no longer capable of fine adjustment to somatic requirements through sympathetic influence. Complete heart-block means the absolute isolation of the heart from coördinate output of blood in response to the demands of the organs. The digitalised heart behaves differently, in that the depression of the node is not due to interruption of the somatic nerve connexions, but to an excessive vagal action which is inhibitory. In effect the condition resembles a mild degree of heart-block. The analogy between the digitalised heart and one showing complete heart-block is striking. In complete heart-block the pulse-rate is constant and remains so, regardless of whether the body is in exercise or at rest. The output is a constant and is incapable of increase. When the patient exceeds his cardiac capacity insufficiency of the circulation

[2] G. A. Sutherland: Quart. Jour. of Med., 1919, xii., 183.
[3] G Bourne: THE LANCET, 1926, ii., 491.

becomes apparent. If exercise is carried further, blood accumulates in the muscles in action, the brain becomes anæmic, and he falls unconscious. As a rule these patients are well aware of their cardiac capacity and take no liberties. To a mild degree similar conditions obtain in the digitalised heart. The normal increase of rate in response to exercise is present only to a slight degree. In the normal subject the act of swallowing slightly slows the heart-rate. Under digitalis and in complete heart-block this action is absent.

Toxicity.

Toxicity arises from excessive stimulation of the vagus. The ideal action of the drug is obtained when the cardiac branch alone is stimulated. Drowsiness, headache, nausea, vomiting, and diarrhœa may occur —actions which are all attributable to stimulation of the other branches. Any of these symptoms preclude the further use of the drug for the time being. One dose too much may turn success into failure, hence the importance of rigid supervision of the administration. In the majority of reported cases, which have died under the influence of digitalis, either the drug has been continued in full doses after the slowing effect was obtained or the case showed a slow pulse prior to treatment. With our fuller knowledge and appreciation of the nature of the action of the drug such fatalities should be extremely rare.

Indications for Digitalis.

Heart failure with a slow pulse is not uncommon, but it is a combination which is almost invariably fatal and beyond the aid of any drug. Apart from sudden death—e.g., from heart-block—progressive heart failure is always myocardial in origin. When the circulation begins to fail, the needs of the various organs become clamorous. The dire necessity in each organ for a greater turnover of blood makes itself known to the heart through the sympathetic fibres and the rate increases. The ultimate appeal is to the myocardium. If the latter is so degenerate that no response by increase of rate occurs, the outlook is hopeless from the outset, and it is obvious that no benefit can be derived from further slowing of the heart. The ideal drug in such a case would be one possessing an action of augmenting the strength of the heart-beat. Unfortunately, there is no proof that we possess a drug with a direct action on the strength of myocardial contraction. More commonly, however, the call for more blood is met by an increased rate of heart action. As a rule the increase in rate precedes the signs of failure, and it is the continuance of this rate which leads to exhaustion of the myocardium. The increased rate decreases the efficiency of heart-beat by shortening the period of recovery or renewal of energy in the cell. The rôle of digitalis in such a case is to isolate the heart from the influence of the sympathetic by increasing the influence of the vagus, which acts as a depressor. The result is a slowing of the heart and a lengthening of the diastolic or recovery period. Such a heart is to all intents beating to supply its own circulation, and this is mainly diastolic. The insistent calls through the sympathetic from the various organs are ignored. Slow powerful beats replace the weak rapid ones, the output is augmented considerably, and gradually the whole body recovers. Myocardial rest is the fundamental principle in this process of recovery. When heart failure is accompanied by increased metabolism, as in a fever, the slowing effect of digitalis is seldom obtained, the drug action being too weak to counteract the excessive sympathetic stimuli.

Rapid Afebrile Rheumatic Hearts.—As already stated, an increase of rate in most cases precedes the signs of failure of the circulation. An appreciation of this fact has led to the employment of digitalis in the early stages to preclude the failure which must inevitably follow a prolonged rapid action. Such an opportunity arises in the afebrile rapid heart of rheumatic infection. It is therefore a rational procedure to place such a heart under digitalis and to maintain this effect till the myocardium has recovered its tone and the rate has returned to normal.

The Tachycardias.—In true tachycardias—e.g., paroxysmal tachycardia and auricular flutter—it must be admitted that the action of digitalis is by no means constant, nor are the results reliable. Occasionally it will be found that slowing action is obtained; in others it fails completely or induces irregularities such as auricular fibrillation. The varying results are but expressions of the fact that the conditions are little understood. The inconstancy of the results of administration of the drug appear to indicate that the causes of these tachycardias differ and the sites of origin vary in individual cases. The drug should be tried in full doses, but in the present state of our knowledge the procedure must remain empirical.

Auricular Fibrillation.—The association of digitalis with auricular fibrillation is so familiar that at times it is forgotten that the drug does not cure by any direct action. Failure to secure the desired effect arises from neglect of this fact. The successful cases are those where the fibrillation is accompanied by a rapid heart action, and the converse is equally true; unsuccessful cases are those where fibrillation is accompanied by a slow pulse. The latter cases are more chronic as a rule, the bradycardia being due to myocardial degeneration in most instances. Given a suitable case—i.e., one with a rapid heart-rate—success should be the rule if the drug is administered correctly. A common source of failure lies in insufficient dosage; more failures are due to this than to overdosage. With adequate supervision digitalisation is practically free from danger.

Digitalis has been found of great practical use as an adjunct to quinidine therapy.[4] Quinidine is the only drug known which possesses a direct action on auricular fibrillation. In some 50 per cent. of cases of fibrillation it is comparatively easy to re-establish the normal sinus-rhythm, but to maintain this state for sufficient length of time to confer a real benefit on the patient is another matter. As a rule a relapse occurs in a very short time and the patient is in statu quo ante. The reason for this in many cases is to be found in the rate of the pulse, which is often considerably increased, and some degree of myocardial exhaustion is probably a factor in the return of fibrillation. Experience has shown that digitalis is much superior to quinidine in maintaining the normal rhythm after it has been re-established. In many cases the quinidine treatment has to be abandoned owing to the onset of ventricular tachycardia. The pulse-rate suddenly increases to about 160 beats a minute, and this is accompanied by much apprehension and discomfort. Further administration of the drug may lead to death from circulatory inefficiency. It is this unfortunate feature of quinidine therapy that has led many physicians to discard the drug entirely. Recently in America,[4] it has been shown that this tachycardia can be eliminated by first digitalising the heart and then proceeding to quinidine. The procedure in this combined treatment can be conveniently described in three stages. The first, stage begins with the digitalisation of the heart. This may in itself indirectly cause a return of the normal rhythm, thus eliminating the necessity for quinidine. The next stage begins within a day of the slowing of the pulse-rate, which should not exceed 80 beats per minute. Quinidine sulphate is now administered at regular intervals until the pulse becomes regular. When this object has been attained, digitalis is again given in sufficient quantity to ensure a steady pulse between 70–80 beats per minute. The maintenance dose should be continued indefinitely. The results of the combined treatment are decidedly better than those of quinidine alone, and my own experience of this dual method has been very encouraging. The administration of quinidine requires a careful study of the individual patient as well as a knowledge of cinchonism before it can be used with safety.

[4] H. H. Riecker: Amer. Jour. Med. Sci., 1925, ii., 205.

CHRONIC APPENDICITIS IN CHILDREN.*

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Not long ago I produced evidence [1] to show that in adults chronic appendicitis rarely occurs as a primary disease, and is generally the result of an acute attack, most so-called cases of chronic appendicitis being in reality atonic conditions of the cæcum associated with virginal ptosis. If these views were correct, one would expect to find that chronic appendicitis is much less frequently diagnosed in young children, for before the age of puberty there is but little difference in the build of the two sexes, and the changes of virginal ptosis have hardly become evident. It is true, as I have previously shown,[2] that occasionally young girls with ptosis will present symptoms somewhat closely resembling acute appendicitis, but such cases are relatively uncommon. Also, if this were a correct explanation it would account for the fact that I had found—I believe in common with most surgeons—so few cases of this variety in my series.

It is my custom to classify and index all my appendix cases as "acute" and "chronic." In the former group I include all gangrenous, perforated and acutely inflamed cases, while in the latter I include those with no active symptoms, even if they have followed late after an acute attack, those with distension, fibrosis, stricture-formation or external dense adhesions. Probably it includes a certain number in which the appendix was not really diseased but showed senile atrophy, or was involved in a Jackson's membrane due to a virginal ptosis. Of cases of appendicitis uncomplicated with other lesions there were 906 examples. Of these, 601 were classified as acute and 305 as chronic. Of the acute, 310 were males and 291 females, giving 50·8 per cent. males; very nearly an equal ratio. In the chronic there were 147 males and 158 females, giving 48·1 per cent. males, again very nearly the same frequency; but it is interesting to note that since visceroptosis has been recognised as a clinical entity, appendices only bound down by Jackson's membrane have not been included in the series of chronic cases. If I had included with this latter group 451 examples of visceroptosis which showed approximately an 80 per cent. frequency in females, the proportion of males in this group would have been approximately only 31 per cent. The difference is, however, seen most markedly when we investigate the frequency with which these two varieties of disease affect young children. I have divided these cases again into two groups, those over and those under the age of 14. In the acute group, of 601 cases there were 186 patients under 14, 106 of them being males and 80 females. This gives a percentage of 30·9 in children under 14. In the chronic group, of 305 cases there were, however, only 33 cases in children under 14; 17 of them were females and 16 males, thus giving a total of 10·8 per cent. When, however, we come to more closely investigate these 33 cases which are classified as chronic appendicitis, further points of very considerable interest emerge.

The cases were of the following varieties:—

1. *Following acute attacks.*—There were 17 cases where the operation followed a few weeks or, at most, a month or two after a definite acute attack which had subsided with careful medical treatment. In all, the attacks had been quite typical. In some, an abscess even had been drained, and in all very definite subacute inflammatory changes were found in the appendix. These cases, therefore, should more correctly have been included with the acute group and not among the chronic. They will thus alter the figures, so that of 618 acute cases 203, or 32·8 per cent., occurred in children, and of 288 chronic cases 16, or 5·5 per cent., alone occurred in children. They are, however, a very important group from a practical point of view, for if the assumption is correct that appendicitis in adults or in children practically always commences with an acute attack, it becomes of very great importance to recognise that such attacks are alarmingly frequent in young children, and that acute appendicitis still has a very high mortality among them in spite of the efforts of modern surgery. In children, also, it is a matter of very considerable difficulty to obtain an accurate history of such past attacks, and hence any short illness which is associated with severe pain and vomiting should be regarded with grave suspicion, more especially if it be followed by localised signs of appendicular trouble. I believe one of the most important factors in making a diagnosis of this condition is the fact that these attacks have been rare, or that there has been only one isolated instance. If the attacks have been very frequent I should be very dubious whether the pain was appendicular, for it is very difficult to believe, and my figures would support this view, that a patient could have ten or twenty attacks without perforation and a general or localised pus formation.

2. *Cases with enlarged mesenteric glands.*—There were in this group five cases where the only lesion found was a subacute or chronic inflammatory change in the mesenteric glands, and especially in those glands of the ileo-colic angle. The clinical importance of this condition in giving rise to symptoms which may closely resemble those of appendicitis has been discussed by Carson,[3] and more recently by McFadden.[4] Braithwaite [5] has laid stress upon the fact that the disease may be found in both adults and children, and that in the latter the symptoms may resemble either acute or chronic appendicitis. In the majority of my five chronic cases, the symptoms consisted of short, sharp attacks, often colicky in nature, although there was sometimes dull, aching pain in addition. The nature and source of the infection in these cases is doubtful, but the majority of investigators appear to hold the view that the glands are tuberculous, and that the source of infection is in the lower ileum. McFadden[4] believes that these glands are not enlarged in acute appendicitis. This has not been my experience, for in many cases of acute infection I have found them enlarged and inflamed. In the five cases, however, in this group the appendix was removed in all, but no pathological change was seen. If it be true that the change in the glands is tuberculous, the presence of an apparently healthy appendix would, of course, not absolutely eliminate it as the source of infection, for it is well known that tuberculous changes may occur in the cervical glands; and the tonsils, which are almost certainly the source of infection, may show either no change or only the presence of a few tubercle bacilli. Although the general belief is that these glands are tuberculous, and many of them are definitely proved to be so by pathological investigation, it is not certain that this is the invariable change, and, indeed, clinical evidence somewhat supports the opposite, for not uncommonly only one gland is found to be affected, and there is no evidence of tubercle elsewhere in the body. Whatever be the nature of the source of the infection, my opinion very strongly agrees with that of Braithwaite, that the appendix should always be removed, for even if not the source of infection, all doubt as to the presence of acute appendicitis will be removed in the event of another acute attack. It is, however, to be remembered that with such treatment the symptoms may not be cured, and after a short interval of freedom the attacks may recur as before. McFadden, in his figures, found that only 42 per cent. of cases were cured by appendicectomy, and, as he rightly says, it is doubtful whether all these were cured, as some were only followed for a period of six months.

3. *Cases of visceroptosis.*—There were five cases in young girls of 13 who had suffered from frequent

* Being a paper read at a joint meeting of the Section of Surgery and the Section for the Study of Disease in Children of the Royal Society of Medicine on Feb. 24th. (See THE LANCET, March 3rd, pp. 444 and 453.)

attacks of pain in the right iliac fossa and lower abdomen. They were all characterised by the fact that there had been a large number of attacks lasting only for a few days, associated with vomiting and pain, and in some cases even with pyrexia, but the condition did not progress. The last attack was in no sense more severe than the earlier ones, and although the attacks were frequent there was never any evidence of local tumour formation, although deep and superficial tenderness were often present. After removal of the appendix and division of the membranes and bands, the symptoms were for a time relieved, but they returned again later. In one case which clinically appeared to have been a typical example of chronic appendicitis with a year's history of frequent attacks, there was complete freedom for 16 months after the operation, but the symptoms then returned. This variety is not likely to give rise to so much difficulty in the diagnosis if it be remembered that it is only common in young girls, and even in them is rarely seen before the age of puberty. The important diagnostic points are the frequency of the attacks without progress and the absence of any inflammatory mass, even if an attack had persisted for some four or five days.

4. *Threadworms.*—There were four cases in which there had been mild attacks suggestive of appendicitis and in which, at operation, the appendix appeared to be slightly inflamed. In every case it was removed, and on section many threadworms were found within its lumen. After operation the symptoms ceased, and, although it is difficult to be certain that the presence of the worms could be held accountable for the symptoms, it seems permissible to believe that they might cause local inflammation and even absorption from the appendicular wall. Cases have been reported by other surgeons in which a segment of a tapeworm has been found in the appendix, but in my own group no parasite other than the threadworm has been discovered.

5. In two cases of the group no pathological lesion of any sort was found, but the patients remained well after operation, and it is probable, therefore, that some intestinal upset of a relatively transient nature had given rise to an erroneous diagnosis, and that the medical treatment, which of necessity had followed the operation, had led to a cure of the symptoms.

Conclusions.

An investigation of these figures shows, therefore, that acute appendicitis is an extremely common disease in children, patients under the age of 14 forming a high percentage of all cases affected with acute changes, nearly 33 per cent. of the total occurring in children. It is well recognised that this disease in children has a higher mortality and is more serious even in adults. This may be due to the fact that young children are less likely to notice their earlier symptoms, and that being prone to ill-defined stomach-aches the attack may be overlooked until it has reached a dangerous stage. Whatever be the reason, there can be no doubt that it is of the utmost importance to recognise these attacks and to carry out an operation at the earliest opportunity.

My own cases failed to reveal a single case of appendicitis chronic from the beginning, unless we consider as such those where threadworms were present in the lumen, and I am therefore left with the opinion that such a condition does not exist. The recognition of this fact is as important in children as it is in adults, but for a very different reason. In adults the majority of conditions diagnosed as "chronic appendicitis" are examples of visceroptosis, and the patients ought not to have their appendix removed, for they may not only receive no benefit, but their progress may be adversely affected. Indeed, they may be started upon a course of many abdominal operations. In children, on the other hand, the majority of patients diagnosed as chronic appendicitis are in reality suffering with acute lesions of this or some other viscus and ought to be operated upon without delay, and since acute appendicitis i in them so common and dangerous a condition, a cases of doubt should be operated upon rather tha a tragedy be allowed to occur from neglecting an earl case of acute inflammation. Many a child's lif might have been saved if its appendix had bee removed on suspicion.

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THE LATE RESULTS OF PULMONARY FIBROSIS.

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The chronic pulmonary catarrhs of childhoo form a pathological rubbish heap comparable to th "eczema" of the dermatologist and the "function neurosis" of the neurologist. Thus the term "fibroi lung" is often loosely applied to a variety of cond tions ranging from chronic catarrh to bronchiectasi the child "with a weak chest" and the victim one of the most horrible of all diseases being place in the same category. The need for determining th relationship between the various forms of pulmonar fibrosis is apparent when we consider the clai of the surgeons that timely operation on earl bronchiectasis may avert the tragedy of its grav manifestations.

Bronchiectasis is usually regarded as a diseas It should be recognised not as a disease in itself bu as the late result of an inflammatory process. The can be no early case of bronchiectasis. We do n speak of early phthisis with cavitation. In bot phthisis and bronchiectasis inflammation, degener tion, and ulceration must precede the formation cavities. Bronchiectasis may develop rapidly, as i the case quoted by Osler in which well-marke dilatation of the bronchial tubes was demonstrate at autopsy six weeks after the onset of an attack broncho-pneumonia. In cases of this kind preventiv treatment is obviously impossible, but such cas are rare. Can we anticipate the occurrence of bro chiectasis in those cases of chronic interstitial inflan mation of the lungs which form so large a proportio of the number of patients attending the out-patien clinics of urban hospitals? Is there any distinctiv type of pulmonary infection of this kind which ca be recognised as the precursor of bronchiectasis?

The chronic pulmonary catarrhs of childhood ma be classified according to the extent of symptoms an physical signs. For practical purposes four grou may be recognised.

(1) *Chronic Pulmonary Catarrh.*—This group i cludes those cases in which an obstinate catarr usually confined to the lung bases, suggests tha there is some permanent fibrosis. Though the sig clear at intervals they have a tendency to recur.

(2) *Pulmonary Fibrosis.*—These cases are simil to those of group 1, but the catarrhal signs nev entirely disappear, are usually limited to the lun bases, and vary in extent and intensity from time t time. Some impairment of the percussion note usually evident. Definite clubbing is seldom see but the skin over the dorsal aspect of the termin phalanx, above the nail root, is usually slightly raise pink and shiny. A measure of permanent fibrosis the lung has probably occurred.

(3) *Fibroid Lung.*—In this group are included those cases of pulmonary fibrosis in which the increase in fibrous tissue is so great that the physical signs are those of solid lung. Breath sounds heard over the implicated area are weak and crepitations less evident than in group 2. Pleural effusion or pneumonia is often suspected. Contraction of the chest wall and cardiac displacement are accompanied by dyspnœa. Expectoration of sputum is the rule, even in quite young children. Clubbing is usually evident.

(4) *Bronchiectasis.*—In this group the signs and symptoms of bronchial dilatation or basal cavities are added to those present in group 3. The sputum is copious and fœtid, and hæmoptysis is common.

Is the condition noted in cases in group 1 an early stage of that found in group 2? In particular, will the sufferers from fibroid lung included in group 3 ultimately develop bronchiectasis? With a view to answering these questions an attempt has been made to trace the after-histories of children of 14 years of age and under who were admitted to the Victoria Park Hospital during the decennial period 1905–14 with the diagnosis of "fibroid lung." Out of a total of 167 cases 26 were traced. Of these 13 responded to an invitation to attend at the hospital, letters were received from 5, information was obtained by inquiry in 2 cases, and the death of 6 was ascertained.

The "admission period" chosen ensured that the survivors should have reached adult age, a minimum period of 13 years having lapsed since the date of discharge from hospital. The diagnosis at the time of admission had been fibroid lung, pulmonary fibrosis, or bronchiectasis. A careful study of the ward notes has been made, and from the condition on admission, the course of the disease while the patient was in hospital, and the condition on discharge, the cases have been allocated to the four groups described above. The cases have been reclassified according to their present condition as ascertained by recent examination, or by news lately received, and the deaths have been noted. The result as set out below does not pretend to scientific accuracy, but may serve as a guide to prognosis. It may also tend to qualify the zeal of those who, in a laudable desire "to do something," overlook the fact that a bad prognosis is not inevitable. It will be noted that in no instance has a case originally classed in group 2 deteriorated to group 3. Group 3 yields 2 deaths, and 2 apparent recoveries, while 2 patients are still alive and fairly well despite well-marked signs of fibroid lung, their present age being 28 and 31 years respectively. Of the 2 cases originally belonging to group 4 one has improved and is now placed in group 3, while one has died.

Summary of Cases.

In the following table the grouping is based on the condition of the patient at the time of discharge from hospital. The comment refers to the patient's present condition or death:—

Group 1.

Case.	Original distribution.	Redistribution as determined by present state.
(q)	..	Recovery.
(d)	..	Subject to winter coughs.
(m)	..	Recovery.
(p)	..	"
(r)	..	"
(v)	..	"

Group 2.

Case.	Original distribution.	Redistribution as determined by present state.
(a)	..	Group 2.
(e)	..	Recovery.
(f)	..	Group 2.
(l)	..	Recovery.
(m)	..	Group 2.
(t)	..	"
(u)	..	Recovery.
(z)	..	Group 2.

Group 3.

Case.	Original distribution.	Redistribution as determined by present state.
(b)	..	Group 2.
(c)	..	" 3.
(h)	..	Recovery.
(i)	..	"
(j)	..	Group 3.
(k)	..	Died. (Death attributed to pulmonary tuberculosis.)
(s)	..	Died.
(x)	..	"
(y)	..	"

Group 4.

Case.	Original distribution.	Redistribution as determined by present state.
(g)	..	Group 3.
(o)	..	Died.

Case (w) died of pulmonary tuberculosis which was probably the cause of the original catarrh.

Conclusions.

Opinions based upon a limited number of cases and upon histories which are incomplete cannot be accepted as final. The results of the present investigations suggest that (*a*) a diagnosis of post-pneumonic fibrosis is only justified when the physical signs of this condition are definite and persist over a period of some months. (*b*) When permanent fibrosis of a lung results from broncho-pneumonia, bronchiectasis is not an inevitable sequela. (*c*) Fibroid lung is compatible with fair health over a period of many years, provided that it is not associated with bronchiectasis. (*d*) These records, admittedly incomplete, support the general opinion that the prognosis of bronchiectasis in childhood is always grave and death before adult life is to be anticipated.

Note.—Since the completion of the above three more cases have been traced. One of these would fall into Group 2 and two into Group 3. Over 20 years have elapsed since one of the latter, a man now aged 31 years, was discharged from hospital. Despite a massive fibrosis of the left lung and extreme contraction of the chest wall he has worked as a docker during the last 12 years. He states that he remains free from any chest symptoms except for occasional slight cough.

MEDICAL DIATHERMY IN CHRONIC MIDDLE-EAR DEAFNESS.

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A RECENT experimental trial of medical diathermy in chronic catarrh of the middle ear has so much diminished the deafness and tinnitus that I draw attention to the method in order that others may try it. In this form of diathermy a beam of high-frequency current traverses the tissues between two electrodes and raises their temperature. It is solely to the rise in temperature that the therapeutic action of the remedy is attributed. For detailed information on diathermy, both medical and surgical, the reader is referred to Dr. Cumberbatch's book.[1]

Several methods of application to the ear have been proposed and carried out, but the following is that which I prefer, for reasons given later.

Method of Application Described.

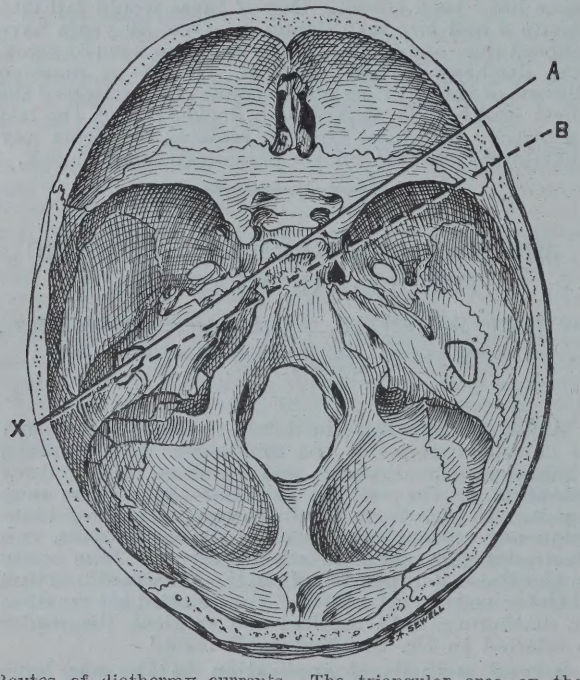
The electrodes used are made of metal, and are of the same size, their superficial measurements being 1 inch by 1½ inches. One is placed over the mastoid process, and the other is laid upon the face just below the prominence of the malar bone, or a little behind it. The position of the face electrode varies according to the shape of the head and that of the mastoid, the aim being to bring the two electrodes as nearly as possible into parallel planes. When I first began to use the diathermy current in ear disease I placed the ear electrode upon the auricle, but it was found that, in spite of careful padding, the irregular surface of the pinna made it liable to burns. The mastoid was therefore chosen. A pad of several layers of lint, thoroughly soaked in 10 per cent. saline solution, is interposed between each electrode and the skin. The patient should be lying down on a comfortable couch, and the electrodes may be strapped on with a rubber band and kept in position with suitable sand-bags, but whatever method be adopted the contact must be close, or sparking will occur and the skin may be burned. The current we use varies from 0·7 to 1·4 amp., according to the patient's feelings (and according also to the amperemeter, for these instruments show variations in their readings). It is gradually raised from zero up to the point when the patient begins to feel the skin under one or other electrode becoming too hot; the strength of the current is then gradually reduced until the point of tolerance is reached, and it is kept there for from seven to ten minutes. After the current is shut off the patient should remain recumbent for a few minutes, as

[1] Diathermy. By Elkin P. Cumberbatch, London, 1927.

vertigo is sometimes experienced if he assumes the erect posture too quickly. The treatment should be repeated every other day. As a rule, I find that, if benefit is going to be received, the patient will become aware of an improvement in symptoms before the end of the second or third week. The treatment is painless if care be taken not to overheat the skin, but as this may occur unexpectedly a trained attendant should be at hand to regulate the current when necessary.

The application may be followed by a reactionary dulling of the hearing for 18 to 36 hours, but many patients fail to experience any reaction. An increase in loudness of the tinnitus may also be observed and may persist longer than the period of dull hearing.

With the electrodes in the positions described above, the current occupies the mastoid process, the middle ear and cochlea, the petrous bone and the Eustachian tube; then it crosses the middle line by the body of the sphenoid to pass by way of the floor of the orbit, the lesser wing of the sphenoid, and the body of the superior maxilla to the cheek (see figure).



Routes of diathermy currents. The triangular area on the petrous represents the tympanic cavity. The lines indicate the main direction of the current ascending to the position of the face electrode, but the current occupies a much wider tract than the lines represent.

After a current of 1·2 amps. had been passing for ten minutes, the temperature under the tongue and outside the region of the "beam" was 99·8° F.

(Current = 0·8 amp.) In the track of the "beam" in the mouth. Temp. = 98·4° F.

(Current = 1·2 amps.) In the mouth as before. Temp. = 100·2° F.

In the external auditory meatus close to the tympanic membrane. Temp. = 100° F.

Indications and Contra-indications.

The region of the current includes the areas which are implicated in tubo-tympanic catarrh, and one would therefore expect diathermy to be most serviceable in that class of case; the expectation generally seems to be realised. Again, in the deafness that lingers after an attack of acute suppuration of the middle ear, when the active disease has subsided, diathermy will be of service. On the other hand, in insular osteoporosis of the labyrinth, or what goes clinically by the name of "otosclerosis," one would scarcely anticipate any benefit from diathermy. Inasmuch as this disease in its pathological appearances resembles rheumatoid arthritis, for which medical diathermy has been used with considerable benefit, we ought perhaps in all cases to make a prolonged trial of the new remedy before deciding against it, particularly in those cases in which the diagnosis of otosclerosis is not quite definite. I can promise some agreeable surprises.

Generally speaking, the presence of pus, or at least an unopened abscess, is regarded as a contra-indication to the use of diathermy. For that reason it should not be employed in acute suppuration of the middle ear, if the membrane is still intact. It is also contra-indicated when hæmorrhage is proceeding or threatening, and so one would hesitate to use it in patients with the Ménière syndrome. Nevertheless, French writers claim successful results even in this variety of ear disease.

Results.

In favourable cases improvement in the hearing and diminution of the tinnitus takes place, and in one or two cases under my care the change in the hearing has occurred unexpectedly. In one instance, that of a medical man with increasing deafness of ten years' standing, the hearing for the tuning-fork at the meatus rose from minus 20 seconds to minus 10 seconds after the fourth exposure to the current, and the improvement continues. The effect on tinnitus has proved also to be full of surprises. In some it has at once become much less loud; and one patient lost her noises altogether. In others an unusual fluctuation in the intensity of the tinnitus was noticed; at one time it would become louder than ever, at another it would be so soft as to be scarcely audible. But the tendency in these cases also has been for the noises to become, as time has gone on, more and more subdued. When it is remembered how intractable tinnitus has proved to all former methods of treatment, this result will bring a sense of hope to all otologists and their patients. At the same time the diathermy made, or seemed to make, the tinnitus much worse in one of our patients. One must therefore be guided by results.

For how long a time the treatment should be continued also depends largely upon results. Thus in early, mild cases a few weeks of treatment will be sufficient, whereas we can scarcely expect to relieve old obstinate cases of middle-ear deafness for many weeks or even months. French workers [2] apply the current daily for two or three weeks at a time and then stop. They also use the semi-vacuum glass electrodes inserting them into the external auditory meatus. The risk of burning the canal and perhaps also the tympanic membrane has hitherto deterred me from trying this route of application.

It will be gathered from what I have said, and I wish to emphasise the point, that the treatment is still in the experimental stage, but my experience of it has already been so unexpectedly favourable that I have no hesitation in recommending it to the attention of otologists as by far the most promising of all the recent plans proposed for the alleviation of "dry deafness."

[2] La haute fréquence en oto-rhino-laryngologie, by Leroux-Robert, Paris, 1925.

BRISTOL GENERAL HOSPITAL.—At 3.30 P.M., on Friday, March 30th, Sir Thomas Horder will open the University centre of cardiac research. Tea will be served in the nurses' lounge.

LEEDS SCHOOL OF DENTISTRY.—Mr. J. H. Whitley, M.P., Speaker of the House of Commons, on March 16th opened the new dental school and hospital which has been erected at a cost of £45,000 on a site adjacent to the Leeds Medical School and the General Infirmary. The site, valued at £8000, was provided by the General Infirmary authorities, and towards the total cost £6500 was contributed by the Dental Board of the United Kingdom and £2600 by the honorary staff of the school. It will provide accommodation for 150 pupils and students. To mark the occasion the University of Leeds conferred the honorary degrees of Doctor of Philosophy on Mr. Charles Rippon, president of the British Dental Association, and of Master of Science on Mr. W. S. Thorburn, warden of the Leeds School of Dentistry and Mr. Walter Marston, chairman of the clinical dental committee of the University.

A NOTE ON THE PATHOLOGY OF EPIDEMIC CATARRHAL JAUNDICE.

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Epidemic catarrhal jaundice has lately been the subject of a report from the Ministry of Health,[1] and recent experience of epidemics in various parts of the country show that the disease is becoming more prevalent, although it has now been recognised in small outbreaks for many years. The following brief pathological note on some twenty cases which occurred in a public school is in no sense complete. It is published merely in the hope that it may be of some assistance to those engaged in future research on the ætiology of this disease. Since writing it I have received a private communication from Dr. Bruce Young, in which he advocates isolation of the patients and disinfection of their excreta, while Dr. C. B. Fuller informs me that he has attended one or two families in which nearly every member fell a victim to the disorder.

The cause of epidemic catarrhal jaundice remains obscure. Weil's disease (icterohæmorrhagic jaundice) is known to be due to the leptospira icterohæmorrhagiæ, and is a serious epidemic disease, while epidemic catarrhal jaundice is not dangerous. In 1923 Buchanan and Gulland recovered the leptospira icterohæmorrhagiæ from the blood and urine of some miners working in East Lothian, but their success has not been repeated by investigators of subsequent outbreaks. Weil's disease is transmitted by rats, which harbour the leptospira icterohæmorrhagiæ in their kidneys, and which convey the infection by contaminating food with their excreta. In the recent epidemic dealt with in Report No. 42, Major H. C. Brown, of the Wellcome Bureau of Scientific Research, failed to demonstrate a leptospira (except in one case which is open to doubt), in spite of a great quantity of material and very adequate laboratory resources. In view of the failure of so competent an observer to find leptospira it was decided to confine such investigations as could be made here to other possible causes. Sir George Buchanan (Report No. 42, p. 15) says: "I am inclined to the view that such mild jaundice epidemics suggest more a bacterial than a spirochætal infection." He also states that fresh material is being investigated with a view to discovering bacterial infection.

Information as to bacterial infection being a possible cause is at present meagre. The following references are to be found in Report No. 42:—

1. The blood of a child, who appeared to be a typical case, was found to agglutinate *B. paratyphosus* A to 1 in 50 (p. 13).

2. A paratyphoid agglutination test was found negative in five instances in convalescent cases. Two specimens of fæces showed no abnormal bacteria (p. 18).

3. Recently a bacillus (?) *B. asiaticus* (Castellani) was recovered from the urine of a convalescent on four successive occasions (p. 18).

Dr. W. A. Bruce Young, M.O.H. City of Winchester, has had experience at first hand of an outbreak of epidemic catarrhal jaundice which attacked some 50 children. Dr. Young read his paper on Epidemic Catarrhal Jaundice of Children to the local division of the British Medical Association and the Society of Medical Officers of Health in March, 1922. This paper contains a wealth of clinical detail, and the following points emerge:—

1. That November is the month of election for these outbreaks—a curious and unexplained fact. It is noted also that influenza is often very prevalent in November, and the question of connexion between the two diseases naturally arises.

2. That the victims were very generally of tender age and that the title Epidemic Catarrhal Jaundice of Children is justified.

3. That in these epidemics constitutional disturbance is more marked than in ordinary obstructive jaundice.

Following up Dr. Young's experiences it seemed desirable to find by blood examination what degree of constitutional disturbance was present, and also to see if blood examination afforded any indication for paratyphoid agglutination tests on any of the patients. White cell counts and differential blood counts were done on three of the patients, and four complete bacteriological examinations of fæces and one of urine were made. Owing to the common occurrence of nephritis in Weil's disease, the urine of four patients was tested to see if any connexion between epidemic catarrhal jaundice and the more serious disorder could be established.

Results.

(*a*) *Bacteriological examination of the fæces.*—Four patients were examined; all of them were found negative for streptococci, hæmolytic or otherwise. In the fæces of three no abnormal bacilli or other micro-organisms were found. In the fourth patient the findings were abnormal. A paracolon bacillus was isolated in pure culture and very few colonies of the normal *B. coli communis* were present on the plates. There was also a trace of pus and numerous bacilli in the urine, but the organism isolated here was *B. coli communis*.

(*b*) *Blood examinations.*—About 15 boys were treated in the sanatorium, while two or three others in various houses were confined to the house sick-room and not sent in. The matron informs me that at the onset the temperature was about 101° F., and the pulse was slow. In none of the four patients examined did the blood count reveal any marked constitutional disturbance. Only the fourth case showed a slight leucocytosis. This is of interest in view of the presence of abnormal bacilli in the alimentary tract, and of a urinary tract infection at the same time. These findings tally with the clinical observations of the medical officers, who report that none of the patients was seriously ill. These examinations were not in any way suggestive of the infective agent being a bacillus belonging to the typhoid or paratyphoid group, as no leucopenia was observed.

(*c*) In four cases the urine was examined for the presence of albumin and casts. In only one was evidence of a mild nephritis obtained.

Discussion.

1. This epidemic confirms the observation that for some unknown reason outbreaks of epidemic catarrhal jaundice are liable to occur chiefly in or about the month of November.

2. The average age of the patients was about 15 years. In this respect, therefore, the outbreak was not quite similar to the one previously observed.

3. There is present, especially at the onset, the constitutional disturbance to which Dr. Young has drawn attention. The blood examinations, however, seem to indicate that this is of but short duration, nor is the blood picture in any way suggestive of typhoid or paratyphoid infection.

4. In contrast to Weil's disease nephritis is slight or absent. It has happened to me in common with others to isolate an abnormal bacillus from the intestine in one case. It is evident that the only way to settle the question whether epidemic catarrhal jaundice is due to bacterial infection of the intestinal tract would be to make a complete bacteriological investigation of the excreta in every patient concerned. Possibly in some future epidemic the Ministry of Health would place one of their whole-time pathologists at the disposal of the authorities. It is also advisable to extend the search to the anaerobic group. The one or two anaerobic cultivations I undertook showed nothing abnormal. Some pathological investigation was made on more than half of the patients. Doubtless efforts to incriminate a leptospira will continue.

[1] No. 42. H.M. Stationery Office. 9*d*.

Clinical and Laboratory Notes.

A NOTE ON THE TREATMENT OF TUBERCULOUS DISEASE OF THE SPINE IN YOUNG CHILDREN.

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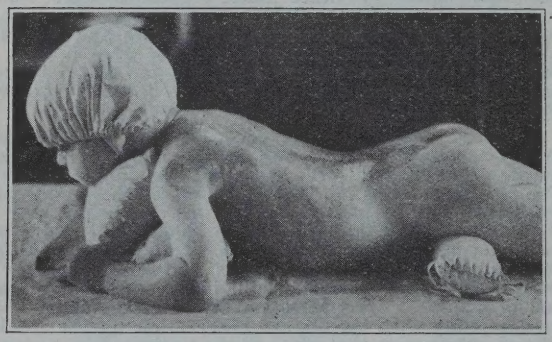
The treatment of Pott's disease in children under 3 years of age presents certain difficulties over and above those encountered in the treatment of older children and adults. In infants especially it is often difficult to obtain the necessary immobilisation, owing to frequent movement for nursing purposes and by reason also of their inherent restlessness. The Carshalton frame, mounted on blocks on the bed, meets these difficulties satisfactorily, but it is expensive and has to be made separately to fit each individual, unless a large number of frames is kept in stock. Any satisfactory method of treatment must ensure adequate fixation of the child in the correct position in a comfortable form of apparatus; it should allow of free exposure of the body to the sun and, if possible, permit movement of the legs below the knees. Inasmuch as correction of deformity and reformation of diseased vertebræ is more likely to take place in young than in older children, it becomes of additional importance to provide an efficient form of apparatus. The writer has, for some years, found a plaster bed or boat, extending from the head to just above the knees, the most useful and satisfactory method of treatment in infants. The boat rests on wooden blocks screwed into the plaster and raised high enough above the level of the bed to admit a bed-pan without movement of the child. The raising of the boat has the additional advantage of permitting a considerable amount of movement of the legs.

Fig. 1.

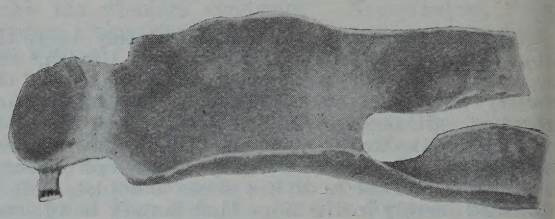


The child in position.

Construction of the Boat.

The child is placed face downwards on a table with a wedge pillow under the chest and chin, and a small pillow under the pelvis if necessary. (Fig. 1.) The spine is thus slightly extended. The legs should be well abducted, as this facilitates subsequent nursing. The boat is then built up with wet plaster bandages, applied in the ordinary way to the previously oiled back of the child. It will generally be found convenient to have in readiness three or four "slabs" made of several thicknesses of folded plaster bandage to reinforce the lumbar and shoulder regions which rest on the blocks. It is important to see that the first layer of bandage is laid on smoothly without wrinkles, as this, of course, forms the inner surface of the boat on which the child lies. The bandages are applied at first transversely to the body and then longitudinally from the head to just above the knees. When the plaster has begun to set, the boat is lifted off the child's back (Fig. 2), a suitable opening

Fig. 2.



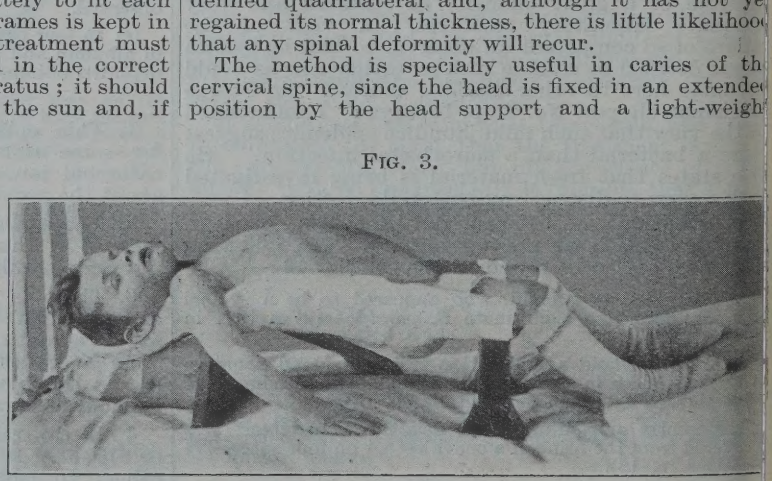
The boat completed and ready to be mounted on blocks of wood.

is cut away in the anal region, and the edges are bound with a single layer of plaster bandage. When dry the inner surface may with advantage be given a coating of celluloid to render it less porous. The boat is then mounted on stout wooden blocks as described (Fig. 3).

In a properly constructed boat the child's spine will be slightly extended, and, if the aim is to "camouflage" the hump by producing compensatory spinal curves, a firm leather pad may be placed just above or below the kyphos as required. Should it be desired to open out the diseased vertebræ still further by hyper-extension, the pad may be placed directly under the apex of the deformity. It is not possible by this method to produce the high degree of hyper-extension effected by the Alton "back door splint" or the "push-and-pull" apparatus, but enough extension can be obtained to allow of re-formation and recalcification of diseased vertebræ. In the case of a child treated as described radiograms taken at an interval of 20 months show that the body of the second lumbar vertebra has re-formed from an indeterminate wedge-shaped mass into a fairly well-defined quadrilateral and, although it has not yet regained its normal thickness, there is little likelihood that any spinal deformity will recur.

The method is specially useful in caries of the cervical spine, since the head is fixed in an extended position by the head support and a light-weight

Fig. 3.



Child lying in the boat.

extension may easily be applied if desired. In practice it is not usually necessary to move the child more often than once or twice a week, and with careful nursing the boat should last for three or four months. Fixation of the spine on a firm, unyielding support is thus secured. Towards the end of the period of recumbent treatment the boat is removed for a part of each day and the child placed on his face to encourage exercise of the back and thigh muscles and to allow the sun to reach the back.

Although no originality is claimed for this method it is suggested that it might perhaps be used more frequently in the treatment of caries in infants.

Summary.

(1) The technique is simple and the material required inexpensive. (2) Fixation of the spine in good position is secured, if the boat is made with the child in the correct posture. (3) The raising of the boat on blocks above the level of the bed simplifies nursing and avoids the necessity of moving the child whenever a bed-pan is used. (4) Children quickly become accustomed to the apparatus, and sore backs are almost unknown.

LOCAL FAT ATROPHY FOLLOWING INSULIN INJECTIONS.

BY E. ARNOLD CARMICHAEL, M.R.C.P. LOND., F.R.C.P. EDIN.,

AND

GEORGE GRAHAM, M.D. CAMB., F.R.C.P. LOND.

INSULIN may cause several forms of local reaction which are now well known. We have recently seen three patients who had a peculiar local atrophy of the subcutaneous fat. This seems to be a very rare condition and has only been reported by three observers, as far as we have been able to ascertain. Barborka [1] reported two cases and Depisch [2] five cases in 1926; Mentzer and DuBray [4] reported several cases in 1927. As the condition has not been described in this country, we thought that a short account of our findings would be of interest.

CASE 1.—A woman, aged 49, who had had diabetes mellitus since July, 1923, was given insulin in September, 1925. The blood-sugar fell to normal with ten units of insulin and her general condition has been very good. She has always given herself the injections in the left arm near the deltoid, and has not obeyed the direction which we give to patients—i.e., to vary the site of injection as much as possible. In April, 1927, she noticed some weakness in the left upper arm, but did not complain of it until August of that year. She said then that she had an aching pain in the left shoulder. On examination the left upper arm appeared much smaller than the right. The skin of the upper arm, just below the level of the insertion of the deltoid, was thin. Over an area of nearly 3 in. by 2 in. the skin could be picked up quite easily and there was an entire absence of subcutaneous fat, so far as could be judged by examination. A large vein was visible in this area; above and below it became buried out of sight in the normal subcutaneous tissue. The surrounding skin and subcutaneous fat appeared normal. There was no weakness of the arm muscles and no analgesia. An X ray examination of the shoulder-joint did not reveal any abnormal changes, although the patient complained of some pain on movement.

CASE 2.—A woman, aged 39, has had a mild form of diabetes ever since 1909. She was given insulin in May, 1924. Her general condition is now good. The blood-sugar is normal on diet and with insulin injections. She had definite local reactions with the English insulin to begin with, and had to have Eli Lilly insulin for a time. Later she was able to take the English insulin without any consequent local swelling. She has always used the skin of the front of the thighs for the injections. In May, 1924, she noticed a depression in the front of the left thigh. In September, 1927, she complained of a local swelling of the right thigh, but nothing abnormal was noticed at that time. In October, 1927, after the first patient had been seen, she was re-examined, and a well-marked depression was found on the front of both thighs. The skin could be picked up quite easily, and as the subcutaneous veins could be seen there was probably no subcutaneous fat present. When the skin was tested with faradic and direct galvanic currents goose skin appeared at once, showing that the skin itself was not seriously affected. No anæsthesia was present and the muscles all seemed strong.

CASE 3.—A boy, aged 8, has had insulin in small doses for two years. For the last three months the dose of insulin has had to be increased from five units up to ten or twelve units twice a day. The skin of the upper arms has been chiefly used for the injections, but also that of the front of the thighs. For the last three weeks a definite wasting of the right arm has been noticed; the skin below the level of the insertion of the deltoid is thin and there is apparently no subcutaneous fat. The muscles are unaffected. On the left side the same condition is present to a slight degree. The boy's mother thinks that the skin of the left arm has already begun to improve since the injections into the arms have stopped.

This condition of atrophy of the subcutaneous tissue may be due either to insulin itself, or to something which has been injected as an antiseptic. At hospital the needles are always kept in a mixture of lysol 1 oz. and methylated spirit 20 oz. in order to prevent rusting. The patients are instructed to wash the syringes out with six changes of cold boiled water. It seemed possible that the atrophy of the fat might be due to the injection of small amounts of lysol. The third patient, however, had never used lysol, as stainless steel needles had always been used and were kept in industrial spirit.

A fair number of patients have now been seen who have suffered considerably from local reactions; in none of these has local atrophy of the fat been observed. Only one of our three patients had any local reaction after the insulin injections. It is, therefore, improbable that the atrophy is connected with any of the usual local reactions. Insulin injections may cause toughness of the skin, so that sharp needles pierce it with difficulty. In the cases of fat atrophy the skin has not been affected in this way. It is also unlikely that it has been caused by involvement of the local nervous mechanism, either somatic or sympathetic. The entire absence of muscle wasting and anæsthesia excludes the somatic nerve, and the presence of the local pilo-motor reflex on faradic stimulation, according to Lewis and Marvin, [3] is in favour of an intact sympathetic system. So far as we are aware, a similar condition has not been reported after the repeated hypodermic injection of any other drugs.

Our observations, together with those by Barborka and Depisch of similar cases after insulin injections, make it almost certain that the condition is directly due to the insulin. It is possible that minute amounts of a fat-splitting ferment are present, as insulin is prepared from the pancreas. In the three cases we have reported, and in those of Barborka, the insulin had been injected too often in one localised area, with the result that changes in the subcutaneous fat have been brought about, presumably by the repeated minute doses of a lipolytic ferment.

The treatment would seem to be the avoidance of the same area of skin for repeated injections. It will be of interest to see if the fat returns, or if the damage is permanent.

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2. Depisch, F.: Klin. Woch., Berlin, 1926, ii., 1965.
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DONATIONS AND BEQUESTS.—Mrs. Hannah McCulloch, of Bettwsycoed, left £2000 to the Bettwsycoed War Memorial Institute, and £500 to the Llandudno Cottage Hospital, and the Croesynyd Isolation Hospital.—The late Mr. Russell Allen, of Davenham Hall, Northwich, left £4000 to the Cheadle Royal Lunatic Hospital, Cheadle, Cheshire, £1000 to the Manchester Royal Infirmary, to endow a bed to bear the following inscription: "16th (the Queen's) Lancers Bed, in memory of John Edric Russell Allen"; £500 each to the Manchester Royal Eye Hospital, St. Mary's Hospitals for Women and Children, Manchester, and St. Dunstan's Hostel for Blinded Soldiers and Sailors.—The late Mr. George Chalmers, of Mooro Velho Villa, Nova de Lima, Estado de Minas, Brazil, left to the executors £500 for any institution for research work in cancer and £500 for any institution for research work in consumption.—Mrs. Emma Grace Caird, of Dundee, besides other bequests, left £5000 to the Royal Dundee Institution for the Blind, £20,000 to the Caird Jubilee Nursing Home, Dundee, and £1000 to the Helensbury Infirmary. Subject to other gifts, she left the residue of her property as to one-half to the Dundee Royal Infirmary, the income thereof to be applied for the benefit of that institution and the Sidlaw Sanatorium.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF ELECTRO-THERAPEUTICS.

A MEETING of this Section was held on March 16th, Sir HENRY GAUVAIN, the President, in the chair. A paper on the

PRESENT POSITION OF RADIUM THERAPY.

was read by Mr. A. E. HAYWARD PINCH (Director of the Radium Institute). He began by giving a brief account of the use of radium in surgical practice, from the time when, 32 years ago, Becquerel read his historic paper on uranium radiations, followed in 1898 by Madame Curie's discovery of radium. At first, he said, radium was used medically as a mild caustic, then it was enclosed in tubes for the treatment of easily accessible tumours. The results were encouraging, and there was now a very elaborate "surgery of access" for the purpose of treating tumours by irradiation. Prof. G. E. Gask, at St. Bartholomew's Hospital, had recently performed plastic resection of the front of the skull, and introduced a radium "seed" into the pituitary body, and Sir Charles Gordon-Watson did a modified Kraske operation to apply radium to a tumour of the rectum. This use of screened radium emanation seeds was the latest development of technique. The use of unscreened seeds had at one time been advocated, but they had been discarded at the Radium Institute as they caused a good deal of necrotic action and pain, and sepsis was a usual sequel.

The alpha rays of radium, said Mr. Pinch, could be left out of a medical discussion; the important ones were the beta and the gamma rays. 94 per cent. of beta rays were absorbed by 1 cm. depth of body tissues, and these rays were the best for the treatment of superficial lesions. Gamma rays were employed for deep radiation. The screens used at the Radium Institute were the following: 0·01 mm. aluminium when the action desired was on the true epidermis; lead of 0·1 mm. thickness for the upper layers of the corium; and silver 0·5 mm. thick, or for the deeper layers 1 mm. thick. By varying the time of exposure and the strength of the apparatus, any desired results could be attained. He showed slides to illustrate a case of lichenification of the skin in neuro-dermatitis, which was cleared up by radium applications after the patient had undergone nervous shocks. One case of circinate psoriasis he had cleared up by three exposures (on three successive days) each of three minutes' duration, using a flat applicator. There was no recurrence. Psoriasis of the glans penis yielded to radium when all else failed. Cavernous nævus cleared up after three half-hourly exposures on successive days, the treatment being repeated in six months. The screen used was 0·1 mm. of lead. Lupus was treated in the same way as cavernous nævus, but the seances were one and a half to two hours, repeated in six weeks. He showed photographs of a case of very severe facial burns, caused by petrol, which was restored almost to normal by irradiating the face, inch by inch, through 1 mm. of silver. Rodent ulcer, he said, could be divided into three main groups. In the first group—the hypertrophic cystic variety—the lesion rose well above the level of the skin. The second was the flat, superficial, cicatrising kind. The third was the deeply ulcerating form. This last was not as easy to cure as the other two; it was best to apply to them a small dose, unscreened, for one and a half hours. Mycosis fungoides showed a specific reaction to radium; he showed on the screen a case of it which was successfully treated by radium. Exposure was for one and a quarter hours.

Dealing next with gamma radiation specially, Mr. Pinch gave as his definition of deep radium therapy "the treatment of disease by prolonged exposures with radium or radon apparatus so screened as to emit a preponderant hard beta and gamma radiation, or gamma radiation only." The best screen for securing gamma radiation only was 1 mm. of platinum; this cut out all beta radiation, and transmitted 90·5 per cent. of the gamma rays. For large surface applicators, however, platinum was an expensive screening metal, and other metals could be substituted by using an appropriate thickness. For these large applicators lead was the metal used at the Radium Institute. The screening was entirely a physical action. He mentioned that because one doctor objected to screening by lead owing to its toxic action. Deep radiation could be carried out by using external applicators, either tubes or flat. Contact radiation could be employed, or "distance" radiation. The former was the chief method at the institute. For breast cases a square applicator was used, giving an exposure of 30 to 50 hours' duration, and 300 mg. of the radium element was employed, screened through 2 mm. lead. A disadvantage was that the secondary beta radiation, unless absorbed, would irritate the skin a good deal. "Cross-firing" was done to ensure a fairly uniform radiation to all parts of the growth; and it was particularly valuable for mediastinal growths. Distance radiation by radium was carried out a good deal on the continent, but it required a large amount of the salt, owing to the law of inverse squares. "Collar radiation" was used in the case of glands in the neck, with a mould of wax compound 3 cm. thick.

There seemed to be two schools in regard to methods of application: that which favoured using small quantities for a long time, and that which preferred large amounts and a short exposure. The speaker used both methods, as each had its special value according to the kind of case. Such conditions as periosteal sarcoma and splenomegaly responded best to a large dose applied for a short time. The other method was best for slow-growing squamous-celled endothelioma. He had been much impressed by the efficacy of the burying of screened emanation "seeds," as first carried out in America. Much less damage was involved in reaching a growth, and they could be inserted under local anæsthesia. If they happened to be left in situ they did not corrode nor do any harm. This method produced results which were better than he had seen from any other. He showed photographs of several cases which had been treated by radium seeds, including one of Mikulicz's disease.

Mr. Pinch concluded his address with a protest and a prophecy. He was sorry to notice that a section of the medical profession seemed disposed to depreciate the excellent work being done by British radiologists, though pointing with admiration to the work of any foreign practitioner. His prophecy, given after the fullest consideration, was that in the very near future radium would form as much a part of the up-to-date surgeon's armamentarium as the scalpel, and that it would be possible to treat with confidence and success many cases of malignant disease which at present were regarded as inoperable and hopeless.

Discussion.

Dr. EDGAR HAYDON emphasised the importance of taking into consideration the idiosyncrasies of the patient in radium therapy, because of the variable degree of reaction shown by different people. For the tongue he had at first used rather large doses, and nearly all the cases had gone wrong eventually, though the immediate result was good. Very much better results were secured by using needles 6 mm. long, with 4 to 5 mg. radium, these being left in position from five to seven days; if cross-firing was done, the result was miraculous. The same word was applicable to antrum cases, perforation being first done with trocar and cannula. Cases of antral disease had been cured for seven years without recurrence.

Dr. G. W. HILL spoke of his first application of radium to the gullet, which was also the first case in which radium was so applied in this country. Of

over a hundred cases in which he had used the radiation, one-third had lived a year or more, greatly benefited; one-third were relieved by the treatment, and the remainder either were not benefited or were made worse by it. He hoped it would be possible to evolve a technique for embedding radium in the gullet. To exemplify the extended field of radium applications he mentioned that he had used it for fibrotic ear cases, and for chronic middle-ear conditions.

Dr. J. H. WEBSTER considered, in opposition to Mr. Pinch's view, that distance irradiation was valuable for certain conditions; it would be a great gain if a larger quantity of radium could be secured to the Radium Institute. For primary breast cases and supraclavicular and nodular recurrences he got the best results from the use of 0·5 g. at a distance of 6 cm., giving a total exposure of 25 hours. Recurrences did not follow this treatment.

Dr. F. HERNAMAN-JOHNSON expressed his agreement with Mr. Pinch's prophecy. In the country as a whole there was not enough radium, nor, indeed, enough doctors familiar with its proper use. Judicious use of X rays and diathermy enabled conditions to be dealt with which could be treated more speedily by radium. In all methods of radiation treatment the general condition of the patient must never be lost sight of. Sometimes in treating recurrences by radiation the patient seemed to arrive at the end of his response and nothing remained but to send him away, as no more could be done for him. But within the last year he had been sending such cases to be treated by light, and a number of them had improved in a remarkable manner; pain disappeared, and they gained 8 or 9 lb. in weight in two months. Light treatment, properly applied, raised the resistance and made the patient more cheerful.

Dr. G. E. VILVANDRÉ was rather sceptical about the efficacy of X rays in the treatment of cancer. He knew of nothing which gave such good results in cases of epithelioma as radium. He objected to the use of ultra-violet light in carcinoma.

Sir CHARLES GORDON-WATSON said he would have liked to hear more about the surgery of access. He explained his procedure for rectal growths which were not regarded as operable by surgery. The important need was to know the optimal dose for a particular case. A standard case was that of a woman with a very advanced growth in 1925, who was cachectic and very ill. She had 50 mg. inserted for seven days, and the dosage worked out at 8000 milligramme-hours. The reaction was very severe, and for several days death seemed imminent. Then she improved rapidly, and was now apparently well. He always tried to get parallel rays playing through the growth. When a growth was fixed to the base of the bladder there were great difficulties. In women it was an advantage to be able to put the needles through the vagina into the anterior part of the growth. In three recent cases he had passed radium into the growth through an abdominal incision. If the whole growth did not seem to have been removed, he afterwards placed tubes of 50 mg. in the lumen of the rectum.

Dr. M. H. OLDERSHAW suggested that the difference in behaviour according to whether radium was used in large quantity for a short time, or a small quantity for longer exposures was explained by the fact that the cancer cell was especially susceptible to the action of radium during the process of division. Hence it was important to secure uniform irradiation through the tumour at the time when it was rapidly dividing.

Dr. T. P. LINEHAM spoke of the earlier practice at the Radium Institute, remarking that in skilled hands flat applicators were of great service; hospital equipments should include them. He favoured combining X rays and radium. He agreed that people who had ceased to respond to radium often showed great improvement when subjected to ultra-violet light.

The PRESIDENT raised the question of the possible danger of radium applications, referring to the deplorable results of the application of X rays to lupus vulgaris in early days and asking whether comparable dangers were to be anticipated from radium.

Mr. PINCH, in reply, said he had not attempted to insert radium seeds into the œsophagus from the outside, but had done so from inside for post-cricoid growth. He referred to a case of annular carcinoma in the lower part of the rectal ampulla. A 100 mg. tube of radium for 24 hours was ordered. By an error a second 24 hours' dose was given, and very intense proctitis ensued, but the growth absolutely and completely disappeared. He would not give this large dose deliberately.

HARVEIAN SOCIETY.

A MEETING of this Society was held on March 15th at the Paddington Town Hall, London, when Sir WILLIAM WILLCOX delivered the Harveian Lecture on

TOXICOLOGY AND ITS APPLICATION TO MEDICAL PRACTICE.

After outlining the position which toxicology had now attained in relation to medicine, the lecturer classified the diseases associated with the development of toxins in the body. These, he said, were in some cases produced by the entrance into the body of germs from without which by growth produce toxins, as occurred in the pathogenic diseases: here the invading causal organism was sometimes known. Also in recent years the importance had been recognised, in the causation of many pathological conditions, of the production of toxins at some localised focus, which were then distributed through the circulation into far distant parts of the body. In another class of cases we had, he said, impairment of the function of organs important to the body economy either for the excretion of toxic substances or for the regulation of metabolism—for example, the liver, the suprarenal glands, or the pancreas. Hence auto-intoxication, whose study, he said, was still in its infancy, but as our knowledge advanced we should learn much of the causation of disease and of preventive and curative measures.

Toxic Action of Drugs.

Indicating that the therapeutic action of a drug merged insensibly into a toxic action, the dividing line being influenced by idiosyncrasy or variations in tolerance (due to defective function), he described briefly the symptoms which might arise from the indiscreet use of bromides, iodides, the arsenic and belladonna preparations, the salicylates and salicylic acid, opium and quinine, while he reminded his hearers that in the treatment of many diseases at the present time the administration of large doses of drugs possessing powerful therapeutic action was advocated—in many instances the remedies being given intravenously. Summarising the studies of Ehrlich in his search for remedies which should have a selective toxic action on the invading microbe while remaining harmless for the host, he gave a description of toxic symptoms which might be associated with salvarsan and its congeners. He eulogised the mode in which Ehrlich introduced salvarsan to the medical profession as a model of perfection, seeing that it was delayed until after preliminary trials on the human subject and issued with the fullest warning of possible dangers and with the contra-indications to its employment. After an enumeration of powerful remedies which have been exhibited in many tropical diseases, Sir William Willcox discussed the lead treatment for cancer recently introduced by Prof. Blair Bell, which he described as an example of the careful use of a poisonous metal so as to obtain the full therapeutic effect without the production of serious toxic symptoms. He noted as interesting that the effects following the intravenous use of lead under proper control should differ from the toxic results which occur in chronic lead poisoning, where the drug

has been absorbed by the gastro-intestinal tract; in the latter condition the cardiovascular and nervous systems and the kidneys suffered damage from chronic disease, while these sequelæ were not noticeable after the therapeutic use of lead intravenously.

Liver Poisons.

A large portion of the address was taken up by the consideration of liver poisons—that is drugs in which a substantial proportion of the absorbed poison will be found in the liver. In many cases the lecturer considered that the liver might be said to have laid down its life in its endeavour to protect the body from the action of exogenous poisons, such as phosphorus in particular, salvarsan, tetrachlorethane, trinitrotoluene, and chloroform; while the same result might be said to occur in the action of bacterial toxins such as are found in typhoid and paratyphoid fevers, influenza, pneumonia, in streptococcal and protozoal infections, such as accompany syphilis, yellow fever, kala-azar, malaria, and amœbic dysentery. The result of the action of liver poisons gave rise, he said, to the definite symptoms which in an extreme form comprised the condition known as icterus gravis, and he laid stress upon the need for the practitioner to remember the danger accompanying the therapeutic use of drugs having a toxic action on the liver, for the action of these drugs might lead to a progressive atrophic cirrhosis. Before submitting a patient to the therapeutic action of a liver poison, it was advisable to protect the organ three or four hours beforehand by a small meal of glucose—40 to 50 g. with coffee and a little milk—because liver cells when stored with glycogen have an increased resistance to the action of toxic substances; and he made a plea for the employment of old and well-tried remedies whose therapeutic action was thoroughly understood, for definite danger had attended the employment of some of the newer remedies. Even the well-known animal extracts, insulin, pituitary extract, and adrenalin, had to be used with proper precautions, while the same applied to bacterial toxins in the form of vaccines or antigens.

Criminal Poisoning.

The lecturer warned the audience that the greatest caution, tact, and firmness must be displayed where any suspicion is aroused that a patient was the victim of an intended crime; and in illustration of his remarks he adduced the well-known Maybrick, Seddon, and Armstrong cases; while with regard to the laws relating to the sale of poisons he said that as at present framed they did not keep pace with advances in chemistry and pharmacology. Therapeutic remedies and chemical substances of powerful toxic action were being discovered daily, and were not comprised by the existing Schedules of Poisons. If control was to be kept over the sale of poisons, it seemed that some comprehensive scheme must be devised which will include newly discovered substances of toxic action—this subject was being considered by a Departmental Committee.

Treatment.

After comments upon drug addiction and industrial and commercial poisoning, the lecturer concluded with the following brief note upon treatment: "The cardinal principle in the treatment of poisoning should be the removal of the unabsorbed poison without the least delay. If this were always remembered, many lives would be saved. Where a poison has been taken by the mouth—unless it is a powerful corrosive—the stomach should be efficiently washed out as soon as possible so that any remaining poison may be completely removed from that organ; elimination should be promoted by free colon washing and by the administration of aperients. Where a poison has been injected subcutaneously free crucial incision and cupping will often enable some of the poison to be withdrawn and this will be facilitated by placing a ligature round the proximal portion of the limb if an injection has been made into that part of the body. Suitable antidotes should be given *after* removal of the poison has been effected as completely as possible. In the case of poisons producing prolonged coma, easily absorbable foods should be administered by the stomach-tube at suitable intervals so as to maintain the strength of the patient. *Chemical poisons*, if absorbed in dangerous amount, always produced serious damage to the bodily organs."

HUNTERIAN SOCIETY.

A MEETING of this Society was held at Simpson's Restaurant on March 19th, Mr. MORTIMER WOOLF, the President, in the chair. A discussion on

HICCUP

was opened by Dr. ROBERT HUTCHISON, who defined it as a sudden involuntary contraction of the diaphragm when the inrush of air that should follow was prevented by closure of the glottis. The abrupt arrest of inspiration produced the characteristic sound. The louder the noise the less the distress of the patient. The frequency of the spasm was usually about one-quarter or one-fifth that of ordinary respiration. The efferent nerve was the phrenic and the afferents were the vagus, sympathetic and sensory fibres of the phrenic. The centre had formerly been supposed to lie in the respiratory nucleus, but there was now reason to believe that it might be in the cervical cord in the region of origin of the phrenic. Langeron had found lesions at this site in a case of prolonged hiccup in tuberculous meningitis, while Urechia and Mitalescu had found hæmorrhages in the third, fourth, and fifth cervical segments in a case of cancer of the pylorus with prolonged hiccup. Since hiccup might persist through the apnœic periods of Cheyne-Stokes breathing, it was hard to believe that the ordinary respiratory centre was the centre of hiccup.

Hiccup might arise from stimulation of any of the afferent nerves mentioned—e.g., irritation or over-distension of the stomach, very hot or highly spiced food or alcoholic excess. Curiously, however, hiccup was a rare symptom of dyspepsia. The irritation might arise in the peritoneum or diaphragm, and any fever might be complicated by hiccup. Benjamin Ward Richardson—a teetotaller—had suggested that febrile hiccup had been due to the excessive quantities of alcohol formerly given in fevers. Hiccup might also arise centrally, as in encephalitis and uræmia, or be a symptom of hysteria. The most severe forms were the epidemic and the post-operative. The latter was most common after operations on the upper abdomen and the genito-urinary tract. The patients were frequently elderly men and the condition was essentially a "private practice disease." Dr. Hutchison could not recall a single case at the London Hospital in 25 years. Its occurrence was due to irritation of the afferent nerves, but there need not be peritonitis. Hiccup had been known to cease when a drain was removed from the ileum. Küttner had found that the anæsthetic and the position of the patient in bed had no influence on the spasm. It was not easy to give an explanation of the well-known frequency of hiccup after prostatectomy. Marion had described a number of cases in which it came and went with a rise and fall of urea in the blood. He admitted the difficulty of explaining why hiccup was not more often encountered in ordinary cases of uræmia.

Hiccup varied from a trivial, almost ludicrous, complaint to a most distressing complication threatening life by exhaustion. Knuthsen had described a patient who hiccuped for a month, about 480,000 times in all; he also mentioned a gentleman in St. Louis who had obtained a divorce after his wife had hiccuped for 20 years. As a rule the patient recovered. Knuthsen had listed more than 50 treatments for which success had been claimed; the only inference to be drawn was that none of them was much use. In the milder cases the spasms could be stopped by various dodges that arrested the action

of the diaphragm—e.g., holding the breath, sneezing, tickling the nose, or compressing the abdomen. When gastric irritation was the cause alkalis, carminatives, and gastric lavage might succeed. In toxic cases food should be stopped and elimination encouraged by the administration of large quantities of fluid. In severe cases it might be necessary to act on the nerve centres by sedatives like morphia, chloretone, veronal, bromides, the intramuscular injection of 30 minims of ether or even chloroform inhalation. Success had been claimed, less explicably, for benzyl benzoate, pilocarpine, and nitrites. In America the latest method was the administration of carbon dioxide, on the principle of stimulating the respiratory centre so vigorously that it would not respond to the pin-pricks of peripheral irritation. The reflex arc had been interrupted by compressing the phrenics or paralysing them or the lower cervical sympathetic by novocaine injection.

Epidemic Hiccup.

Sir FARQUHAR BUZZARD said that graphic records had shown that there were two spasms in a hiccup; inspiration and closure of the glottis was preceded by a very brief expiratory spasm. Hiccup had acquired increased importance from its somewhat frequent appearance in epidemic form during the last ten years, especially in America. 3000 cases had been seen in the Winnipeg outbreaks of 1919, 1921, and 1924. Adults had been more affected than children, and males more than females, in the proportion of 9 to 1. Little was known of its contagiousness save that, as in encephalitis, it was rare for two members of the same household to be affected. The incubation period appeared to be nine days and second attacks were very rare. The epidemics generally occurred in winter, lasted six to eight weeks, and were often coincident with epidemics of encephalitis. There might be a prodromal period of lassitude, vague pains, headache, epigastric discomfort and perhaps fever, or the onset of paroxysms might be sudden. The patient usually hiccuped between four and twenty times a minute, often for half an hour at a time with half-hour intervals. Remedies were powerless, but the spasms ceased of their own accord in three or four days. There might be no other symptoms, but often there was some vomiting and tenderness of the scalp, and occasionally headache, which persisted for some time. Death was rare. One fatal case had had six days of hiccup followed by fever and somnolence; at post-mortem his cervical cord in the phrenic region showed inflammatory changes like those of epidemic encephalitis. A typical case of epidenic hiccup might develop symptoms of encephalitis or generalised myoclonus. The condition might therefore be regarded as a small fragment of the symptomatic mosaic of epidemic encephalitis. The ætiology of epidemic hiccup was in its infancy, but it had been brought into line in a striking way with the other manifestations of encephalitis. Hiccup might be an initial symptom of encephalitis, but was rare as a sequel. It often appeared as an epidemic in communities over which a wave of encephalitis had recently passed, and might represent the effects of an agent of lower virulence. It was certainly an important question whether epidemic hiccup should not be notifiable.

There was some evidence to show that the medulla rather than the cervical cord was the centre for hiccup. It was an interesting question what was the original purpose for which hiccup was evolved. Was it in very early days a mechanism to prevent forced and deep inspirations while food was about?

Discussion.

A brisk discussion followed and a number of Fellows and visitors related personal and professional experiences of hiccup.—Dr. J. CAMPBELL MCCLURE said that he had always regarded the medulla as the shunt between peripheral and vagal messages. It was for the patients who made no noise that he was most afraid; he had seen patients quietly hiccup for months and then die. It was a most ominous and terrible symptom, which could not be cut short by one moment; the only treatment was to find the cause and remove it.—Dr. F. HOWARD HUMPHRIS spoke of the value of electrical treatment and diathermy.—Dr. C. F. HADFIELD and Dr. R. J. CLAUSEN spoke of hiccup coming on under anæsthesia. The former had tried carbonic acid gas without success.—Dr. A. C. JORDAN suggested that hiccup might be the beginning of vomiting. Cats hiccuped before vomiting and gastric lavage relieved hiccup.—Dr. A. S. CURRIE thought it was analogous to spasmodic sneezing. He had cured a bad case by large doses of hydrocyanic acid.—Dr. J. ALEXANDER described cases of high blood pressure, renal disease, and auricular fibrillation where hiccup had absorbed all the attention, but had disappeared when the underlying condition was treated.—Dr. D. NORRIS described hiccup in severe cases of typhus in Serbia.

The PRESIDENT thought that the cause in upper abdominal post-operative cases was some irritation at the base of the liver. All anæsthetists knew that pelvic operations required particularly deep anæsthesia, and a last resort to stimulate respiration was stretching the anal sphincter; he suggested that the pelvic diaphragm played some part in respiration. The physiology of respiration and the physiology of hiccup were very much bound up together. He had known vinegar in hourly 1 oz. doses act like magic on post-operative hiccup.

Dr. HUTCHISON, in reply, observed that the subject had been "much laboured but little advanced." He thought that the majority of patients with hiccup tended to recover and that the alleged cures were psychotherapeutic or pure coincidence. Those who died would have died in any case.

NORTH OF ENGLAND OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY.

A MEETING of this Society was held at Sheffield on Feb. 24th. Dr. LEITH MURRAY, the President, who took the chair, described a case of

Sarcomatous Metaplasia of a Fibroid.

Malignant change in fibroids, he said, had interested him for many years. The literature in general gave its incidence as from 1 to 2 per cent., whilst Eden and Lockyer believed that it was slightly under 1 per cent. But though he had incised, and cut representative sections from, every fibroid that he had ever removed, he had never before come across definite malignant metaplasia occurring within a fibroid. This suggested that there must often be an element of doubt in the diagnosis. Probably the chance of error had been increased by including fibroid polypi, for on four occasions he had seen an œdematous fibroid polypus whose microscopical appearance was rather suggestive of malignancy. Cytological examination and absence of any recurrence had made it certain that the œdema was the cause of this appearance. In most of the recorded cases the symptoms included rapid growth and blood-stained discharge from the uterus. This discharge suggested that the tumour, if it had really begun in a fibroid, had partially escaped therefrom, and there was a loophole of error inasmuch as a uterine sarcoma, arising, say, in the endometrium and close to a fibroid, might penetrate the fibroid. The case to be described showed definite malignancy arising in the centre of a fibroid removed by myomectomy. The malignancy was not suspected until the specimen was incised after operation. A further point of interest lay in the youth of the patient.

A woman, aged 29, married seven years, had one child aged 6. She complained of aching pain in the right side off and on for twelve months; menstruation 5/28, regular and moderate until one month before she came under notice when, four days after an ordinary period, a further and similar period appeared. Examination showed a rounded and enlarged uterus, the fundus being palpable two inches above the symphysis pubis. A diagnosis of fibroid uterus was made, and on Nov. 20th, 1927, a solitary

fibroid weighing 12 oz. was enucleated from the right wall of the uterus at the fundus through an anterior incision. There was at first slight difficulty in defining the capsule anteriorly, but not more so than there was sometimes with myomectomy operations. The uterine cavity was accidentally opened during the enucleation and was sutured. The specimen had the external appearance of an ordinary fibromyoma, but preliminary incision showed in the centre a soft red and pulpy area, completely surrounded by fibromyomatous tissue. There was a complete layer of pale fibroid tissue beyond the central growth, which at no point had reached nearer the capsule than a quarter of an inch. Microscopical examination showed a core of hæmorrhage and necrosed tissue with malignant areas at the periphery. These areas were definitely cellular and appeared to have a vascular relationship.

The President thought the growth might well be called an endo- or peri-thelioma. It resembled very much a specimen described and figured by Leith.[1] The patient, so far, remained well. Ought he to remove the uterus?

Dr. A. A. GEMMELL (Liverpool) brought forward a case illustrating some of the difficulties of deciding what was the origin of the sarcomata seen in fibroids.

The patient was 54 years of age and had not come to the menopause. She had had four children. Menstruation had been excessive for the last 12 years and she had been losing continuously for four months when she came for consultation. The specimen consisted of the uterus and both appendages removed by total hysterectomy. It weighed 2½ lb. and measured on removal 5½ × 4 × 4 in. It was regular in outline with adhesions of omentum to its anterior surface. The uterus had been opened anteriorly and showed a tumour projecting from the posterior surface and filling the cavity. The lower pole of the tumour was necrotic and had burst. On section the tumour was mainly whitish and soft in appearance, with areas of yellow coloration and some hæmorrhages. Sections showed the growth to be almost entirely a sarcoma of mixed-cell type. Remnants of the fibroid were visible both at the periphery and amongst the sarcomatous cells. Sections from the uterine muscle at the base of the tumour failed to show any sarcoma, as did sections of the endometrium close up to the point where the tumour had ruptured.

Whitridge Williams's article of 1894, said Dr. Gemmell, still remained among the best of those on the histogenesis of sarcoma of the uterus. Judged by his standards the present growth was not likely to have arisen in the endometrium, as that membrane was normal right up to the place where the necrotic portion of the tumour had ruptured, and because the muscular uterine wall maintained its normal thickness. It might have arisen from the uterine wall, but the myoma-like tissue amidst the sarcoma cells and at the periphery of the tumour were against this view. That the tumour was apparently circumscribed did not exclude the uterine wall as a possible origin. On the other hand, this myoma-like tissue might be merely remnants of the connective tissue of the uterine wall. The history of excessive menstrual loss for 12 years was, however, suggestive of a pre-existing non-malignant condition.

Mr. W. GOUGH (Leeds) described a case of

Carcinoma of the Body of the Uterus after Interposition Operation for Genital Prolapse.

The patient, aged 70, complained chiefly of urinary symptoms—dysuria and pain, and also hæmorrhage in the urine for the previous month. There was also complaint of bearing-down pain, pain in the lower abdomen and back. Amputation of the cervix, colporrhaphy, and vesico-vaginal interposition had been done 15 years previously. Since that time she had been under the care of another surgeon, suffering from obscure urinary symptoms. On examination there was marked atrophy of the vagina, and no cervix could be felt. There was a hard mass lying posterior to the urethra and extending to the base of the bladder.

Mr. Gough said it was only the fact that he knew that the surgeon who had operated on her for the genital prolapse was in the habit of performing the interposition operation that made him suspect this mass to be the body of the uterus. Under an anæsthetic he found the anterior vaginal wall invaded by growth, which had ulcerated through about half an inch above the urethral meatus. The bladder was enlarged and extended well above the pubes. The urethra was unaffected. Microscopical examination showed the growth to be a papillary adeno-carcinoma, on the whole of the corporeal type.

Dr. F. H. LACEY (Manchester) described a case of

Combined Concealed Accidental and Unavoidable Hæmorrhage.

A 4-para, aged 33, was seen when 37 weeks pregnant, with a history of slight vaginal hæmorrhage. Although the hæmorrhage had been slight, yet her general condition resembled more that following a severe hæmorrhage. She was pale and faint, the pulse was 120 and weak; she was somewhat restless and complained of no definite pain, but of a continual ache in her abdomen and of dizziness which had been present for about seven hours; there was marked albuminuria. The abdomen was very large, tense, and tender, particularly to the right of the fundus; fœtal parts were felt indefinitely, but fœtal heart sounds could not be heard. The os admitted one finger and the placenta was felt to be covering it, but Dr. Lacey was confident that she had a concealed accidental hæmorrhage and decided to perform Cæsarean section. On opening the abdomen the uterus was found to be very distended, but there was no evidence of hæmorrhage into the wall; on opening the uterus a large quantity of amniotic fluid escaped and the cavity was seen to be occupied by twins, one placenta being in the lower uterine segment, and the other on the posterior wall of the uterus, under which, and close to the edge, was about a quart of clots. The uterus was removed. The twins weighed 6 lb. and 5½ lb.; the former, which was attached to the placenta prævia, lived 40 minutes, whereas the other child was stillborn. The mother made an uneventful recovery.

On account of the concealed hæmorrhage, said Dr. Lacey, the blood was examined and the W.R. was found to be strongly positive. This patient, therefore, had marked albuminuria, hydramnios, twins, concealed accidental hæmorrhage, placenta prævia, and syphilis.

Prof. MILES PHILLIPS (Sheffield) read a note on

Intermittent Periodic Pain as a Symptom of Carcinoma Corporis Uteri.

Attention was first drawn to this symptom, he said, in 1863 by Prof. James Simpson, the discoverer of chloroform, at a meeting of the Edinburgh Obstetrical Society. After demonstrating a specimen of carcinoma of the body of the uterus, he referred to the daily recurrence—usually at a regular hour—of intense paroxysms of pain, at first perhaps slight and intermittent, but soon reaching a high pitch of intensity, at which it continued for an hour or two, and then gradually subsided. Prof. Phillips had seen similar intermittent pains with calcified submucous fibroid and somewhat similar paroxysms of pain with retention of fluid in the cavity of the uterus from occlusion of the os. Except in these rare cases, however, this kind of pain was only to be met with, so far as he knew, in carcinoma of the body and fundus of the uterus. Eden and Lockyer (1928), in describing the symptoms of corporeal cancer, did not refer to pain of any description, which struck him as very remarkable, for in his series of 82 cases pain was definitely present in 60 (73 per cent.). A recent case in which the symptom was well marked had led Prof. Phillips to hunt through his own records of corporeal cancer. Five instances of Simpson's pain could be found in the series of 82 cases. A study of these led him to agree with Pozzi that the symptom was probably neuralgic.

The PRESIDENT was surprised to note Prof. Phillips's high percentage of pain. He himself had gone over his private cases, 34 in all, and found that in 24 there was no complaint of pain. Two of these showed dilatation of the cervix with palpable growth of the external os, but without invasion of the cervix by malignancy. It seemed unlikely, therefore, that pain was associated with attempts at extrusion. Five of his patients complained of gnawing or cramp-like pain without periodicity; four of these were operable. Five complained of pain apparently arising outside the uterus—e.g., intestinal colic from adherent intestine, suppurative appendage disease, or prolapse.

Prof. W. FLETCHER SHAW (Manchester) described a Full-term Ectopic Pregnancy, and Mr. ST. GEORGE WILSON reported a case of the same kind treated by Cæsarean section with delivery of a child, with numerous deformities, which lived 5½ months.

[1] Journal of Obstetrics and Gynæcology, 1911, xix., 454.

Reviews and Notices of Books.

MALIGNANT DISEASE.

The Surgical Treatment of Malignant Disease. By Sir HOLBURT J. WARING, M.S., M.B., B.Sc. Lond., F.R.C.S., Surgeon and Lecturer on Surgery, St. Bartholomew's Hospital; late Vice-Chancellor, University of London. London: Humphrey Milford, Oxford University Press. 1928. Pp. 667. 50*s*.

IN 1921 Sir Holburt Waring delivered the Bradshaw Lecture before the Royal College of Surgeons of England, taking for his subject the surgical treatment of malignant disease, and it is not surprising that, faced with the necessity of summarising within the limits of a single discourse so huge a subject, he should have felt prompted later to enlarge upon the theme, and finally to make it the subject of a text-book. In the original preparation of the lecture much material in connexion with the surgery of malignant disease was amassed from the records of St. Bartholomew's Hospital, while the lecturer stated definitely that he would confine himself to personal observations made during the past 25 years; but now consultation of general surgical literature has enabled him to range with full detail over the whole field, while in every chapter of this large volume personal experience plays a part, whether in advice as to diagnosis or in instruction as to treatment.

The result is a book of outstanding merit which must have entailed much sustained work. The arrangement of the matter is regional, which clearly has its disadvantages, for some repetition must be employed under different local considerations, when general precepts might have been laid down. But in consecutive chapters we have clear accounts of malignant disease as it occurs in various parts of the body, the order of these being to a great extent arbitrary. The first eight chapters, comprising nearly a quarter of the book, deal with the malignant affections of the gastro-intestinal tract from the tongue to the rectum, pride of place being due alike to the variety of growths to be anticipated and to the large field for operative procedure which has to receive discussion, although the affections of the liver, gall-bladder, spleen, and pancreas are separately treated. The next nine chapters deal with malignant disease as it manifests itself in the genito-urinary tract, including an elaborate study of malignant disease of the breast, but excluding consideration of the bladder, ovary, uterus, and vagina, to each of which special chapters are devoted. Malignant disease of the brain, intracranial tumours, and the affections of the spinal cord form a group of interesting essays, and other chapters deal with the conditions found in the face and skin, the thorax, the different limbs, and the special organs.

In each section the same orderly manner of dealing with the subject is observed. The symptoms and clinical appearances are described, so that the reader is reminded alike of the probable site of any particular manifestation and the probable interpretation of any history given by the patient; as well as warned in what direction to look for the evidence required before a diagnosis is made upon which treatment and a fair expectation of the results can be founded. When the surgeon has definitely decided, with such reaching in his mind, that an operation is necessary, the reasons for the advocacy of one or another procedure are given, as well as careful descriptions of the operative technique. The details of the various operations follow in the main the text of the author's well-known "Manual of Operative Surgery"; the instruction is sound and clear. Comprehension of the conditions which the surgeon may have before him, and of the methods which he may be advised to adopt, is assisted by profuse illustration of various malignant conditions, as exhibited in the museums, as superficially seen in the subject, as made apparent by preliminary exposure and when undergoing actual operation, while frequent diagrams are introduced justifying the advice given at various stages in the conduct of the case. Many semi-diagrammatic illustrations of the lymphatic system connected either with a particular organ or with an anatomical area are of real service in explaining the problems of glandular involvement. Notes follow on the results to be expected from surgical interference, and here a remark made by the author in his preface is significant. For while crediting the clinical records of St. Bartholomew's Hospital with being admirably kept, he points out that he has not been able to give complete statistical tables of the ultimate results of the surgical treatment of various patients, owing in great measure to the fact that during the twenty-year period, 1900 to 1919, which covers the records of the selected patients, no regular "follow-up service" was in existence. This condition of things, he says, is now remedied at St. Bartholomew's Hospital, but it is known to remain in many other large institutions, and these should hasten to imitate a valuable movement. To all the more important chapters a section is added dealing with treatment by radiological methods, and this is a place where the reader loses, by the regional arrangement adopted, the laying down with authority of some of the general principles which by this time have emerged. But Sir Holburt Waring, when he disclaims personal knowledge of the advances that have been observed under radium and irradiation treatment, is careful to provide the views of other authorities over many large fields of work.

We have here a valuable work of reference. The reader will find in its pages the material for diagnosis, treatment, and prognosis in all forms of malignant growths, the teaching being based upon wide reading and prolonged personal experience, and simplified by numerous illustrations, many of them in colour, and mostly very good. The number of cases cited is prodigious, and the author has been scrupulous to assign to others credit where credit is due. To each chapter there is a copious list of references, and a bibliography to the accuracy of which Sir Holburt Waring issues a challenge, when he states that his experience of bibliographies, as generally furnished in medical literature, has been unfortunate; the care that, no doubt, he has taken in the matter has not made the references in his book impeccable.

CHEMICAL ENCYCLOPÆDIA.

An Epitomised Digest of Chemistry and its Industrial Applications. Fourth edition. By C. T. KINGZETT, F.I.C., F.C.S. London: Baillière, Tindall and Cox. 1928. Pp. 807. 35*s*.

THE fourth edition of this useful digest has been greatly enlarged and revised. It has been the aim of Mr. Kingzett, who was one of the original founders of the Institute of Chemistry, to compile a work of reference which should be of use not only to professional chemists and chemical engineers, but to editors in search of concise information, to professional men who needed to look up something outside their own particular department of knowledge, and to the general community. The encyclopædia, as it is now called, is not intended to compete with such a comprehensive work as Thorpe's Dictionary of Applied Chemistry, but the author claims for it the position of being the only work of its kind in existence which gives so extensive a range of condensed information concerning chemistry and industry. In considering its merits, this intention should be borne in mind, for naturally the laboratory worker will not find within its compass all the information which he requires, although if journalists and publicists were to have a book like this on their shelves and make a friend and confidant of it, fewer mistakes would occur on the occasions when chemical and physical matters are referred to. The verbal accuracy of the dictionary is commendable, and in its development from a dictionary to an encyclopædia it has become increasingly interesting. The purchaser will get good value for his money.

PHYSICAL CHEMISTRY.

The Phase Rule and its Applications. Sixth edition. Revised and largely rewritten by ALEXANDER FINDLAY, M.A., D.Sc., F.I.C., Professor of Chemistry, University of Aberdeen. London: Longmans, Green and Co., Ltd. 1927. With 165 figures. Pp. 326. 10*s.* 6*d.*

A GOOD deal of rearrangement and rewriting has been necessary in order to do justice to recent advances without unduly increasing the size of this book. Of the 17 chapters included in the new edition two are devoted to systems of one component, seven to those of two components, and four and one to those of three and four components respectively, while a new chapter has been introduced on the practical application of equilibrium diagrams; this latter will be found of great value providing, as it does, a guide to the practical operations of the winning of salts by crystallisation from solution, and thus furnishing evidence of the utility of the phase rule first enunciated by Gibbs in 1877. During the 23 years of its existence this book has helped to elucidate to an ever-increasing number of students the intricacies of the phase rule, and has contributed much to the clearer understanding and more intensive study of this important branch of physical chemistry.

THE PHILOSOPHY OF MEDICAL PRACTICE.

Behind the Brass Plate. By ALFRED T. SCHOFIELD, M.D., M.R.C.S. London: Sampson Low, Marston and Co., Ltd. 1928. Pp. 326. 15*s.*

EVERY doctor who has enjoyed a long and active professional life must have amassed enough amusing and interesting experiences to make at least one volume of reminiscences. Dr. Schofield is no exception; indeed, the fact that he has been much absorbed in sociological matters has widened his circle of acquaintances. He has friends in all classes of society, and has had more varied experiences than most men. His book is not meant to be read from cover to cover, but can be opened anywhere. It is full of good stories and a genial philosophy.

PATHOLOGY.

A Text-book of Pathology. Fourteenth edition. By FRANCES DELAFIELD, M.D., and T. MITCHELL PRUDDEN, M.D. Revised by FRANCIS CARTER WOOD, M.D., Director of the Pathological Department, St. Luke's Hospital, New York, and of the Institute of Cancer Research, Columbia University. Edinburgh: E. and S. Livingstone. 1928. Pp. 1339. 55*s.*

THE fourteenth edition of this popular text-book has been carefully revised and new matter has been inserted, especially in those chapters dealing with the diseases of the nervous system, infectious diseases, and the diseases of bones and joints. Vitamins and hormones are noticed, and changes have been made in the chapters dealing with the thyroid, pancreas, lungs, and the blood. There are several new illustrations. To make room for these additions the chapter on lesions following various types of poisoning have been eliminated, for they are adequately dealt with in text-books of legal medicine, and a chapter on technique has been dropped from Part III. These changes have enhanced the value of the book without altering its character, and we have no doubt that its well-deserved popularity will be maintained.

Post-mortem Appearances. Second edition. By JOAN M. ROSS, M.D., B.S. Lond., M.R.C.S., L.R.C.P., Senior Assistant Pathologist to Royal Free Hospital; Lecturer in Pathology, London School of Medicine for Women; late Assistant Pathologist, St. Mary's Hospital. London: Humphrey Milford, Oxford University Press. 1928. Pp. 225. 7*s.* 6*d.*

IN preparing the second edition of this popular manual the author has wisely resisted any temptation there may have been to enlarge it. The text has been revised, and notes have been added on eclampsia, mediastinal tumours, subacute bacterial endocarditis, and thrombosis. Due attention has been paid to such criticisms as were called forth by the first edition, and we have no doubt that the book will maintain its popularity.

PSYCHE MINIATURES.

Medicine and the Man. By MILLAIS CULPIN, M.D. Lond., F.R.C.S. Eng. London: Kegan Paul, Trench, Trübner and Co., Ltd. 1927. Pp. 67. 2*s.* 6*d.*

The Constitutional Factor in Disease. By ARTHUR F. HURST, M.D. Oxf., F.R.C.P. Lond. Pp. 93. Same publisher and price.

THESE two additions to the medical series of Psyche Miniatures form, like the previous volumes, well-written approaches to the study of large and deeply interesting subjects. Dr. Millais Culpin discusses medicine and man, as the subject of medicine, from the neurologist's point of view, opposing the axiom that where an organic disease cannot be found a functional nervous disease must be thought of. He protests against the assumption that changes in mechanism always precede and cause mental processes—lightly to make this view a basis of clinical medicine involves, as he points out, facing the greatest problem that the philosopher can be asked to solve. He would restrict the word neurosis, which is now applied in a haphazard fashion to mental and physical conditions, to disturbances that can be described in terms of physiology—actions in which the neuron plays part, and the word psychosis he would have employed where the psyche is in question. Inquiring into the background of a neurosis, he points out that the doctor is presented with a heterogeneous group of disorders marked by an absence of post-mortem findings—for instance, dysmenorrhœa, asthma, many dyspepsias, miners' nystagmus, and D.A.H.—where a proper attempt to investigate the emotional side of the patient is very usually absent. The public he finds insufficiently concerned in the matter, preferring to ignore the existence of sufferings which do not prevent the victims from carrying on their work under unsuspected difficulties. Medical students remain uninterested in things which will play no later part in examinations, and quacks of all sorts thus obtain their opportunity. Dr. Culpin's remedy, put briefly, is that the various phobias, inhibitions, and obsessions now regarded as text-book curiosities, and too often unrecognised as they recur in medical practice, should be studied as phenomena of importance in establishing diagnoses, and suggesting both outlook and treatment.

Dr. Hurst's essay is founded on an address delivered before the Ulster Medical Society, to which additions have been made in the light of recent investigations, sometimes carried out at his clinic in the New Forest, and sometimes by other observers to whom due reference is made. He recalls to our mind the famous studies of T. Laycock and Jonathan Hutchinson now neglected, and urges that a study of the constitutional factor in the acquisition of disease would be a promising field for research. But the chapters which follow do not discuss either the fundamental meaning of constitution nor the difficult problems of heredity, for these could not be treated in any general way in so confined a space; he considers here only the constitutional factor in certain pathological conditions in which he has been specially interested for many years. No allusion is made to the inherited liability to such infections as tuberculosis, to certain anatomical abnormalities that are inherited, to the "inborn errors of metabolism" described by Garrod, or to the familial blood disorders, but Dr. Hurst discusses the gastric diatheses, achylia gastrica, Addison's anæmia, diabetes, nephritis, hyper- and hypo-piesia, and asthma in an informing manner, with practical suggestions for treatment.

THE LANCET.

LONDON: SATURDAY, MARCH 24, 1928.

PULMONARY FIBROSIS.

FEW diseases have suffered more vicissitudes of nomenclature than this pathological condition, and although it is convenient to refer to is as an entity, it is perhaps not altogether accurate to do so. BAYLE named it melanosis, SUTTON fibroid degeneration, CORRIGAN cirrhosis, ADDISON grey induration, WILSON FOX chronic pneumonia, and certain continental writers interstitial pneumonia. Few diseases, also, have produced such confusion of ideas as to their causation. RAMAZZINI,[1] whose alert mind marked many curious facts, described in his "Diseases of Tradesmen" a form of the disease in stone-cutters due to a "subtile Dust" and in "dissecting the Corps of such Artificers" he found the lung "stuffed with little stones"—obviously the pneumonoconiosis of our modern nomenclature. Later, BAYLE, LAËNNEC and others of the early nineteenth century French school of pathologist-clinicians described another variety, the fibroid disease of pulmonary phthisis, and though their descriptions are not always conclusive, it is evident they were dealing with cases of chronic pulmonary tuberculosis. Then, after more than half a century of confusion, came the classical monograph of CLARK, HADLEY, and CHAPLIN,[2] which separated off from the two conditions mentioned above the non-tuberculous pulmonary fibrosis of childhood resulting from the broncho-pneumonias of measles and pertussis. The account of the disease given by these writers still remains the standard work from which writers of text-books draw their descriptions. Unfortunately the coloured plates are not reproduced. This is a pity, for they are wonderfully good illustrations of the morbid anatomy of the various types of the disease. The picture of Addison's grey induration, especially, is a beautiful work of art showing the pigmented mottled lung and the thin white intersecting bands marking off the areas and planes.

Not a great deal has been added to our knowledge of pulmonary fibrosis in childhood since the publication of the last-named monograph. As in the case of other diseases in which the onset is insidious and the course extremely chronic, few observers are fortunate enough to watch more than one or two cases through to the end, and post-mortem inspections, as HODGKIN called them, are hard to come by. Moreover, by the time the autopsies occur the picture has generally been completely spoiled by terminal infections. And so precise knowledge on many points is still woefully lacking, and teaching on the disease almost non-existent. Nowadays, when the various State schemes of the tuberculosis and school medical services require, for statistical purposes, a label if not a diagnosis for these cases, it is small wonder that the fibroid disease of childhood often defies the ingenuity of the pigeon-hole manufacturer. If the cases are not notified as tuberculosis—and the bulk of them are certainly non-tuberculous—they run the risk of being overlooked under the various schemes of treatment provided, whilst to notify them is generally to falsify statistics. Amongst the recent attempts to throw new light on pulmonary fibrosis may be mentioned Dr. LEYS'S monograph.[3] The author has framed his title to cover as far as possible all the clinical forms of the disease. A large part of the book is an able restatement of CLARK, HADLEY, and CHAPLIN'S work, with recent descriptions and cases added to bring the subject up to date. Dr. LEYS does not contribute much that is new—perhaps it is hardly fair to expect it on such a subject—but when he opens his chapter on the origin of fibrosis with the words "fundamental phenomena in reaction to injury are those of healing; without them, there is no disease but death" we feel he has added to the confusion. Dr. LEYS considers that the lung in disease has become something of a Cinderella in medicine. The morbid anatomy of fibrosis certainly merits that description, but we are not so sure that the analogy applies to the rest of the picture. It is not so much neglect as the inherent difficulties of the subject which have made progress slow. The radiological contribution, for instance, is nowadays by no means despised and neglected, as Dr. LEYS himself demonstrates. On the bacteriological side he devotes a large amount of space to Pfeiffer's bacillus, which, he suggests, may be the causative organism in many cases. Sufficient data are given to make this view attractive, but the pursuit of this ubiquitous organism generally leads the worker, at his long last, into the mists of uncertainty. The difficulty is often not to find Pfeiffer's bacillus but to avoid finding it, and we see no reason why much that is claimed for this bacillus might not be credited to some of the other organisms which frequently infect the respiratory tract. Dr. LEYS has made out a good case for further investigation, however, and we hope he will be able to follow it up.

Another recent piece of research is that of Dr. W. BURTON WOOD published in our current number. Dr. WOOD has traced and examined a series of cases which had been diagnosed as fibroid lung during childhood. He has grouped them into four classes by the aid of the clinical notes and then regrouped them at the time of the follow-up examination 13 or more years later when the cases have reached adult age. By this means he has gone a considerable way towards answering some of the puzzling questions of this disease—e.g., what becomes of these children with fibroid lung? Do they grow up or drop out in the struggle? And how many become bronchiectatic? Broadly speaking, the answer given is that even with extensive fibrosis a bad prognosis is by no means inevitable and bronchiectasis by no means the rule. Dr. C. D. S. AGASSIZ and Dr. W. J. GILL[4] have written a careful account of the clinical condition from cases in children which have come under their care at High Wood Hospital. Several important doubts are settled by these writers. They found, for instance, that only 8 per cent. of their cases gave a positive Wassermann reaction, whilst antisyphilitic treatment of these cases failed to yield

[1] De morbis artificum diatriba, English Translation by James, 1746.
[2] Fibroid Diseases of the Lung, Sir Andrew Clark, W. J. Hadley, and Arnold Chaplin, 1894.
[3] Chronic Pulmonary Catarrh. By Duncan Leys, M.B., M.R.C.P. London: H. K. Lewis and Co. Ltd., 1927. Pp. 130. 7s. 6d.
[4] Archives of Disease in Childhood, February, 1928.

good results. The writers are at pains, also, to differentiate clearly between chronic pulmonary fibrosis and tuberculosis in childhood. We wish those who are prone to see pulmonary tuberculosis in every ailing child might read and mark their account But the most original contribution made is the work they have done on the cyanosis so commonly associated with fibroid lung. The blood-oxygen of these cases was found to be diminished owing, it is suggested, to the failure of aeration in the part of the lung affected —the "unaerated shunt" of LUNDSGAARD and VAN SLYKE. Pulmonary tuberculosis in childhood, on the other hand, does not show this diminution of blood-oxygen, presumably because the disease is less likely to be attended with extensive production of fibrous tissue. It would seem, therefore, that the component parts of the problem of pulmonary fibrosis are slowly yielding to careful research.

THE N.H.I. AMENDING BILL.

WE summarised last week the main provisions of the National Health Insurance Bill now before the House of Commons. The new Bill makes generous concessions to insured persons and will result in a considerable measure of simplification in the administration of the Act. Under the arrears scheme, which is suggested, the genuinely unemployed person will not be penalised as he is under the existing Acts. At present he ceases, after a period of 12 months' unemployment, to be insured at all; sickness and disablement benefits drop out, although he remains entitled to medical benefit. Under the new scheme the insured person when out of work will have a rubber stamp impressed at the appropriate place on his card by the local employment exchange, and such stamp will count as a contribution stamp. Domestic servants and agricultural labourers, who do not come under the Unemployment Insurance Act, will benefit under the arrears scheme. All insured persons will get cash benefits during the last nine months of insurance, that is, so long as they are entitled to medical benefit. The Bill makes no change in the rates of contribution payable by employers or employed, and the liability of the Exchequer towards the cost of the scheme remains at one-seventh of the cost of benefits and administration in the case of men, and one-fifth in the case of women. The approved societies in many areas are badly hit by the heavy sickness benefit claims, which in themselves mean loss of contributory income, and to excuse arrears would make many of these societies insolvent; their funds are to be recouped therefore by a Government grant. With unemployment at its present level, the cost to societies of forgoing collection of the penalties in respect of arrears due to genuine unemployment is estimated at £680,000 a year. It is proposed that, while the present rate of unemployment continues, an annual grant of £500,000 towards this cost shall be distributed to approved societies out of existing and prospective surpluses in the stamp sales account. The societies will welcome the simplification in administration which the Bill provides. At the present time an enormous number of arrears notices have to be sent out, something like 2,500,000 per annum; these will be reduced to 500,000. It is estimated that the scheme will relieve the societies of three-quarters of their arrears difficulties.

So much towards smooth working of administrative machinery. The Bill, if it goes through, will provide a new additional benefit, under the control of the approved societies, but dependent on their having an available surplus. Provided the money is available an approved society will be able to secure special treatment, for those of its members who require it, at any "charitable" institution where this treatment is given, by making contributions to the funds of such an institution. The first schedule contains a list of additional benefits from among which the approved societies may make a selection of the benefits to be provided for their members out of a disposable surplus—including the additional benefits specified in the existing Acts, others which have been added by Regulations and the new benefit granted in Clause 4 of the Bill. These were set out last week in tabular form, and it will be seen that there is no material increase in their scope, they still form no part of the statutory medical benefit, and they are outside the purview of insurance committees. The distribution of additional benefits is thus left entirely to the discretion of the societies which are in the happy possession of disposable surpluses. Some even of the wealthiest societies have found the cost of dental benefit and optical benefit beyond their means and have been compelled to limit the scope of these schemes. The approved societies are very jealous of their freedom to select and to define precisely what additional benefits shall be given and the extent to which they shall be granted. This is part of the autonomy granted to them by the original Act. But so long as the open competition for insured members remains, and so long as the societies have undisputed control over their surpluses the anomaly of inequality of benefit must continue.

The amending Bill is, as we have said, of interest to the medical profession for its omissions rather than for what it contains. To complete the scheme of medical benefit and to make it available for every insured person would require drastic changes in policy and appropriate legislation. It is natural to inquire what is the significance of the striking omissions in the Bill. Insurance committees which were supposed to be doomed are after all to be retained; they now have charge of medical benefit, and when the additional benefits become statutory these will be administered presumably by the same committees. Most remarkable is the omission of any scheme for pooling surpluses of approved societies, even to a partial extent. Pooling of surpluses would lead to central administration of additional benefits under a scheme whereby they would be available for all insured persons; but this desirable object is out of reach until the Treasury is prepared to make substantial grants for the purpose. The only suggestion that the Government policy is looking in the direction of extending medical benefit to include additional benefits is contained in the memorandum explanatory of the Bill to the effect that, if and when any of these forms of treatment are made generally available to all insured persons as statutory benefits, their administration would be transferred to the insurance committees For the present we must perforce remain content with medical benefit in its general practitioner form. The much-needed help in diagnosing disease by means of laboratory facilities with the services of pathologists and specialists is not forthcoming, and there appears to be little prospect of these services materialising while we labour under the present financial stress. Unless, that is, a new sense of relative values should awaken among our rulers.

IMMUNISATION OF HOSPITAL STAFFS.

WE can to-day successfully protect human beings by immunisation against cholera, diphtheria, scarlet fever, small-pox, and the typhoid group of infections. We can also produce active immunity against measles by giving human convalescent serum five to eight days after contact with a patient in the infective stage—a modified attack results and active immunity is attained. Against how many of these diseases should a responsible authority advise the general public or nursing staffs to be immunised? It is possible to over-insure against risks which are small and a too-zealous advocacy of multitudinous immunisation against diseases of rare occurrence will surely alienate the moderate man. As regards the staffs of fever hospitals a decision is not difficult; the time has arrived when a conscientious medical superintendent must feel more than a little perturbed at any persistence of diphtheria and scarlet fever amongst his nursing and ward staff, and at the unwisdom of allowing any nurse positive to the Schick or Dick tests to remain on duty. But what of the staff of general hospitals? In America the matter is being taken very seriously, and Surgeon J. P. LEAKE [1] of the Federal Public Health Service, has recently suggested a programme for superintendents who wish their nurses to take no risks. It is a formidable one and involves 15 visits to the physician between "day zero" and the fifty-third day, two more visits seven months later, with 20 injections in all, the nurses finally being immune to small-pox and the typhoid fevers and having been converted from "Schick- and Dick-positive" to negative. We suspect that the comment of the matron of any of our large metropolitan hospitals would be brief and pointed. Nevertheless there is no escape from the logic of the position; each of the diseases in question does attack a number of nurses, and when diphtheria or scarlet fever is prevalent and nurses are liable to be told off to care for patients who come out with these diseases in the wards, it is a clear duty to immunise them, unless they are found to be naturally immune. It is another question whether the incidence of these two diseases amongst the general body of hospital nurses would justify insistence on immunisation in the case of nurses who may be reluctant to have it; most authorities would feel their duty had been discharged in making immunisation available to those nurses who desire it. Similar reflections apply to the general public; in institutions or communities where these two diseases are constantly present, responsible authorities do not hesitate to urge immunisation against them. Where certain diseases are absent in normal times—e.g., typhoid fever in England—the average person will consider immunisation unnecessary.

Much will necessarily depend on what may be called the technique of immunisation, and especially on reduction in the number of injections so far as this can be achieved without sacrificing efficiency. Investigations now in progress group themselves along four lines: simultaneous injections against several diseases, increasing the immunising power of each injection while avoiding the production of reactions, combining the test and the immunisation in one injection and, finally, obtaining higher efficiency by spacing the injections with progressive increase in dosage. Along all these lines much progress has been made, and we may look forward to a time in the near future when successful and simultaneous immunisation against these various diseases will be readily attained by a smaller number of injections and tests than that suggested in Dr. LEAKE's article. A. CASTELLANI [2] immunised simultaneously against three paratyphoid fevers and cholera, producing agglutinins to all of them. M. WEINBERG and A. T. GLENNY have produced antitoxin to two, three, or four gas gangrene organisms in the same horse. J. P. KINLOCH [3] and others have immunised children jointly against diphtheria and scarlet fever, and P. DESCOMBEY and G. RAMON [4] have immunised against typhoid and tetanus, giving at the same time salvarsan or other drugs called for. But it seems fairly clear that a great excess of one antigen will lessen or suppress the immunity response to a second antigen given simultaneously, and that the capacity of the animal body to react is a more or less limited quantity which can be wholly apportioned to one antigen or divided amongst several without sacrifice of efficiency if the quantities are properly balanced. The immunologist can readily increase the immunising power of diphtheria and scarlet fever prophylactic, but he must never lose sight of the possibility of reactions, non-specific as occur commonly enough in diphtheria prophylaxis, or specific as the "miniature non-infectious scarlet fever," which can be produced by too rash a dosage of scarlet fever toxin. Gradually the present prophylactic toxins and toxoids are being increased in efficiency. A. SORDELLI and R. SERPA [5] showed that toxin-antitoxin floccules are antigenic, and H. SCHMIDT [6] has begun to use this antigen on a large scale, recommending one injection only; GLENNY [7] has further shown that toxoid-antitoxin floccules are also highly antigenic and produce satisfactory immunity in animals with one injection. We understand that these floccules are being tried in England at present in a course of two doses, the aim being later to try one dose only. Attempts to combine the Schick test toxin and diphtheria immunising antigen in one dose were made some years ago in a somewhat indefinite way in the original Behring toxin-antitoxin mixtures; W. H. PARK uses his first toxin-antitoxin injection subcutaneously to indicate whether the patient is Schick-positive or not, and simultaneously to immunise. In young children this is so successful that he has employed the method in 100,000 young children; in older children, and in adults, the Schick response is liable to be blurred. This method is not possible with the toxoid-antitoxin mixture used in England, for this contains presumably no free toxin. A combined indicating and immunising mixture, D.P.I.M., to be given intradermally, has been described by GLENNY,[8] and is still under investigation. It is highly probable that the present routine weekly doses of diphtheria and scarlet fever prophylactics, though administratively convenient, are not spaced for optimal immunisation. GLENNY has shown that horses being immunised against tetanus give a much better yield if allowed to rest a month after the first injection before the course is continued, and RAMON [9] has advocated a rest of several weeks for human beings after the first diphtheria prophylactic dose.

In view of all this work we may look forward with some confidence to a day in the near future when a nurse reacting positively to the Schick and Dick tests, and wishing to be immunised against diphtheria and scarlet fever, will need no more than three injections, increasing in dosage at monthly intervals, and thereafter a Schick and Dick test. If antityphoid immunisation be also advisable, the typhoid antigen might be given simultaneously in the three monthly doses. We may also hope that some day the immunising injections will also be indicating mixtures and will render manifest the stage of immunity reached.

[1] Jour. Amer. Med. Assoc., Jan. 14th, 1928, p. 311.
[2] Ind. Med. Gaz., 1913, p. 457.
[3] Jour. Hyg., 1927, xxvi., 345.
[4] Ann. de l'Inst. Pasteur, 1927, xli., 803.
[5] Compt. rend. Soc. de Biol., 1925, xcii., 825.
[6] Arch. f. Hyg., 1926, xcvi., 251.
[7] Jour. Path. and Bacteriol., 1927, xxx., 587.
[8] Ibid., 1926, xxix., 118.
[9] Ann. de l'Inst. Pasteur, 1925, xxxix., 1.

LEICESTER ROYAL INFIRMARY.—The Leicester and County Saturday Hospital Society, having accumulated a reserve amounting to £30,000, has granted £10,000 of it to the Leicestershire Infirmary. Last year the society raised £44,000; in a quarter of a century it has collected £540,000. The rebuildings and enlargements of the infirmary, which are now in hand, will cost £90,000. It is officially stated that in one week recently it dealt with 1750 accident cases.

Annotations.

"Ne quid nimis."

PREVENTION OF BLINDNESS FROM OPHTHALMIA NEONATORUM.

IN 1920 Dr. Addison as Minister of Health appointed a departmental committee to investigate the causes of blindness. Two years later in its final report [1] this committee made certain recommendations about the prevention of ophthalmia neonatorum, and the Council of British Ophthalmologists has now issued a statement [2] founded on replies to a questionary, addressed to all the important ophthalmic centres in Great Britain, in order to find how far these recommendations have been put into practice. The first of them was as follows: "That in every area, whether urban or rural, the Ministry of Health should take measures to secure the provision of suitable hospital accommodation for babies suffering from ophthalmia neonatorum and for their mothers." In this subject the answers were satisfactory except for 10 out of 51 districts in England and 1 out of 11 in Scotland. The second recommendation was that the Ministry should take steps to ensure that adequate nursing provision is always available for cases of ophthalmia neonatorum which are not admitted to hospital. The replies to the question on this matter were nearly all favourable, but the Council considers that they are too optimistic; whereas cases coming to the ophthalmia neonatorum centres from the immediate neighbourhood nearly always do well, those coming from outlying areas are—owing to difficulty and delay in transport—seen at a time when irreparable damage has often already been done. The third recommendation refers to facilities for consultation with an ophthalmic surgeon and for bacteriological investigation. In these respects the Council finds that the conditions are sufficiently satisfactory. The fourth recommendation advocates arrangement for pupil midwives to visit ophthalmic hospitals, or the ophthalmic departments of general hospitals in order to get direct experience of ophthalmia neonatorum. Here the condition of affairs appears still to be most unsatisfactory. There are facilities in only 24 out of 51 districts, and in 9 out of the 24 districts where instruction is given it is only by lectures and not practical. In London, at St. Margaret's Hospital, and to some extent at Moorfields, ample opportunities exist, but even there advantage is not being taken of the ample and full organisation for teaching.

In reply to further questions as to the number of cases of defective vision and blindness resulting from ophthalmia neonatorum, the Council is able to report excellent results in some of the large towns. In London, out of 2869 patients treated at St. Margaret's Hospital one was blinded in both eyes, four in one eye, 30 had both eyes impaired, and 56 one eye impaired. The report finishes with the following important recommendations:

That the Ministry of Health be advised:—

(1) That the whole country be mapped out into districts, each of which should have an ophthalmia neonatorum centre; and that all large towns that have an ophthalmia neonatorum centre should undertake the treatment of cases occurring not only in the towns but in the surrounding areas.

(2) That, where necessary, existing centres should be made responsible for larger areas than at present, and that arrangements be made for ambulance transport of both mother and baby if required.

(3) That it should be made a compulsory part of the training of district nurses to attend one of these centres for practical instruction in the application of treatment in such cases.

That the Central Midwives Board be advised:—

That, in accordance with the recommendation of the Departmental Committee, as centres for the treatment of ophthalmia neonatorum are established, it should be made a compulsory part of the training of midwives to attend one of these centres for practical instruction in the recognition of these cases.

That the General Medical Council be advised:—

That it should be made compulsory for all students to attend once at least at one of the ophthalmia neonatorum centres for practical instruction in the management and treatment of these cases, the most convenient time in the curriculum being during attendance at the course on fevers.

Something like 100 cases of ophthalmia are brought each week to the notice of the public health authority in England and Wales, but damage to the eyes from this kind of infection is as unnecessary as it is disastrous and we welcome these proposals that greater care should be taken to prevent it.

[1] H.M. Stationery Office. 1922. Pp. 136. 4s. (Now out of print.) See THE LANCET, 1922, ii., 1292.

[2] Brit. Jour. Ophthal., March, 1928, p. 149.

SICKNESS AND AGE.

TWELVE months ago an officer of the American Public Health Service[1] published an investigation of data covering a ten-year period relating to absences from work on account of invalidity among employees of the Edison Electric Illuminating Company of Boston, U.S.A. It established a number of interesting points, such as the influence of paying wages during sickness upon increasing absenteeism for short periods; the fact that on an average each male lost 8·9 calendar days yearly through disability, and each female 14·0; that sickness caused 12 times as many absences as accidents among men, and 171 as many among women; and that respiratory diseases accounted approximately for one-half of all absences. A further study has now appeared,[2] dealing with the three years 1922–24, in which the general incidence of sickness is presented in the form of simple graphs. Accurate facts regarding the influence of occupation in causing sickness have proved difficult to elucidate, owing on the one hand to the way in which individuals of different physique and health naturally select different types of occupation, and on the other to the way in which a slight disability, such as minor respiratory illness for a telephone operator, may necessitate absenteeism from one occupation but not from another. The influence of age is shown to vary with the length of the sickness; thus absenteeism for sickness lasting less than four days varies for males from 872 absences per thousand on the pay roll under age 25, to 372 per thousand at ages 55 and over; for absences lasting from four to seven days age exerts little if any influence, the absences averaging close to 226 per thousand at each age, but absences lasting eight days and over vary from 130 per thousand at ages under 25 years, up to 211 from ages 55 and over. It is somewhat unexpected to find that youth experiences more minor sickness than does age, but this has also been disclosed by British investigations. Length of service was found to influence absenteeism so advantageously that those who had been five or more years with the company experienced less sickness than those of shorter service by 41 per cent. for one to three day cases, by 20 per cent. for four to seven day cases, but by only 2 per cent. for cases lasting eight days and over. Thus is seen how getting settled into an environment minimises the risk of succumbing to sickness. Here again, as in other inquiries, especially regarding the incidence of industrial accidents, is displayed the advantage of a permanent personnel and the disadvantages of a high labour turnover. A tendency for those who experience much sickness to experience an undue number of industrial accidents has also been brought out in other inquiries; a further point has now emerged—namely, that a definite correlation exists between industrial and non-industrial accidents; that is to say, the man who is more than usually likely to sustain an accident during work is also more

[1] D. K. Brundage: A Ten-year Record of Absences from Work on Account of Sickness and Accidents. Public Health Reports, U.S.A., vol. xlii., No. 8, February, 1927.

[2] Sickness Among Persons in Different Occupations of a Public Utility, ibid., vol. xliii., No. 6, February, 1928.

than usually likely to sustain an accident outside working hours. Clearly the cause which suggests itself as common to both periods is the personal factor, upon which attention is to-day being so much concentrated.

THE INNERVATION OF MALIGNANT NEW GROWTHS.

THERE is at present among pathologists a fairly general agreement that malignant new growths are not innervated. This view is based, partly at any rate, on the negative results obtained by a number of investigators when applying to neoplasms the methods usually employed for the demonstration of nerves in normal tissues. But it is also implied in our present conception of neoplasms as autonomous independent masses of cells which have passed out of the control of the organism in which they grow. A few years ago Itchikawa [1] and his collaborators claimed to have demonstrated nerves in tumours. But another Japanese investigator, Nakamoto,[2] was unable to confirm Itchikawa's findings for malignant tumours, while he could demonstrate nerves in benign tumours. Prof. Horst Oertel, of Montreal, has now published a preliminary report [3] in which he claims to have demonstrated nerves in malignant neoplasms. His observations were made on human material and include both sarcomas and carcinomas. The method employed was a modified Bielschowsky method, which depends upon impregnation with silver nitrate. The paper is illustrated by a number of micro-photographs which give a good idea of the structures which Prof. Oertel identifies as nerve-fibrils. In a tissue such as a tumour, which has lost its normal structure, it is clearly much more difficult to differentiate between nerve-fibrils and delicate young connective tissue elements, and further confirmation is required before Prof. Oertel's conclusions can be accepted. A confirmation of his findings would, indeed, as the author points out, involve a profound reorientation of our present conceptions of malignancy. We would have to admit (to use his words) that "the tumour problem extends beyond the tumour cell to the whole functional and structural complexity of the tumour organisation and growth. Indeed, the conception of independence and autonomy in tumour cells, if these observations are further substantiated, will have to be modified or interpreted accordingly." There is already a certain amount of clinical evidence, which has been emphasised particularly by Sir Lenthal Cheatle,[4] that certain squamous cell carcinomas and rodent ulcers of the skin have a definite relationship to the distribution of cutaneous nerves. The problem is intimately associated with the question of the existence of trophic nerves, and Prof. Oertel's observations may serve as a stimulus for the further investigation of this difficult subject.

ALCOHOLISM AND PELLAGRA.

A CONNEXION between alcoholism and pellagra has been noticed by various observers, but lately seems to have been lost sight of. Attention is again drawn to it by a paper by J. V. Klauder and N. W. Winkelman,[5] who give an account of 100 cases of pellagra, studied at the Philadelphia General Hospital, in which a diagnosis of pellagra was established. Though no percentages were worked out, the occurrence of alcoholism among the patients seems to have been high. The condition was usually severe, and it was often found that pellagra had developed after a continuous debauch of six or eight weeks during which the patient had consumed very little besides alcohol; spaghetti is given in one instance as the only other article of diet and baked beans in another. It is recalled that observers in Italy, Spain, Cuba, and the United States have noted the connexion between alcohol and pellagra, and the conclusion is reached that alcoholism predisposes to development of the disease, which Klauder and Winkelman are apparently inclined to regard as chiefly an intoxication. Criticism of this view was fairly expressed in the discussion [6] which followed the reading of their paper before the Section of Dermatology of the American Medical Association. Dr. J. F. Schamberg put forward the alternatives, that the action of alcohol depends on the digestive disturbance caused by prolonged drinking bouts, or that the alcohol is itself responsible for the pellagroid symptoms. He referred to the work of Dr. J. Goldberger, who has produced pellagra-like symptoms in dogs and rats by purely dietetic means, as being very convincing. Dr. E. S. Lain, of Oklahoma, said that pellagra in the Southern States is very common among children and young adults, in whom alcoholic habits had not yet developed, and also in certain poor communities where the Volstead Act is taken very seriously. He suggested that the part played by alcoholism may be chiefly economic. Dr. E. D. Crutchfield emphasised the impossibility of properly nourishing an alcoholic or a lunatic and thought that the evidence about the relation of pellagra to alcohol confirms the theory that it is a deficiency disease. Dr. J. B. Shelmire pointed out that pellagra was not diagnosed in the States until 1907, though the diet after the Civil War, for instance, must have been extremely poor. Dr. Klauder finally summed up. He said that, of course, he did not regard alcohol as the universal ætiological agent in pellagra; clearly, in the Southern States, it could not be so; but he believed that in the Northern States it is a strong predisposing cause. This seems a reasonable view. In some areas, no doubt—particularly, though not exclusively, in those where much maize is eaten—pellagra has a wholly dietetic origin; but in others, where the diet is not normally deficient, some other factor is necessary to render it so for certain individuals. Thus only can the occurrence of sporadic cases, even in England, be accounted for.

VORONOFF'S GRAFTING EXPERIMENTS: AN OFFICIAL INVESTIGATION.

The Board of Agriculture for Scotland has issued an official report on the work and claims of Dr. Serge Voronoff. It will be remembered that a delegation recently visited Voronoff's experimental farm in Algeria in order to investigate his grafting experiments on animals. The delegation consisted of Dr. F. H. A. Marshall and Dr. A. Walton of Cambridge, Dr. F. A. E. Crew and Mr. W. C. Miller, F.R.C.V.S., of Edinburgh. The objects of the visit were; (1) to witness the applications of testicular grafting to animals of agricultural importance; (2) to examine certain animals already subjected to this technique; (3) to examine and report upon the claims made by Voronoff concerning the economic value of this method in the field of practical live stock breeding. As an instance of rejuvenation the delegates were shown the bull "Jacky," an account of which is published in Voronoff's "Study of Old Age and my method of Rejuvenation." This bull had attained 17 years of age, and had been useless for stud purposes for two years when grafted. It was claimed that within four months of operation there had been a complete disappearance of the usual signs of old age and a return of potency. Three years after the operation, Jacky began to show once again enfeebled reproductive powers and a second operation was performed with a similar gratifying result. Voronoff regarded this as furnishing a complete and unqualified substantiation of his claims concerning rejuvenation. The British delegates are of the opinion that whilst the case of Jacky supports Voronoff's hypothesis it cannot be accepted as a final and conclusive proof. In the case of stud bulls 10 to 15 years is not a very exceptional age at which

[1] Bull. de l'assoc. franç. pour l'étude du cancer, 1924, xiii., 569, 626. [2] Gann, 1926, xx., 10.
[3] Canad. Med. Assoc. Jour., 1928, xviii., 135–139.
[4] Brit. Med. Jour., 1903, i., 904; ii., 1515; and 1908, i., 437.
[5] Jour. Amer. Med. Assoc., Feb. 4th, p. 364.
[6] Jour. Amer. Med. Assoc., Feb. 4th, p. 371.

an animal may retain its sexual vigour, and under rare conditions it may be retained still longer. It is also conceivable that Jacky at the time of grafting was suffering from transient ill-health, and the fact that his recovery occurred in spring or early summer may not be without significance. But even if the efficiency of grafting be admitted it must be remembered that in Great Britain the supply of high-class sires in their prime is adequate, and that for this reason grafting is not likely to be of economic value. In spite of his rejuvenation, the fertility of Jacky was low since only six calves arose as the result of 18 services. A low fertility ratio in a bull is a marked disadvantage.

The second series of experiments examined by the delegates were those on rams. It has been claimed by Voronoff that not only are the quantity and quality of mutton and wool improved by grafting rams before puberty, but also that this improvement is transmitted to the next generation. The delegates were of the opinion that these experiments had been carried out without the employment of sufficient statistical safeguards. The sheep used for the purpose came from a heterogeneous type of flock and it was felt that no precaution had been taken to avoid all possibility of "unconscious" selection of favourable types. Throughout the greater part of the year, the sheep were under the sole charge of native shepherds, who, though undoubtedly responsible and competent herdsman, could scarcely be expected to appreciate the finer points of a critical experiment. The possibility that nutritional inequalities may have affected results could therefore not be excluded. The method of control was also unsatisfactory. Small isolated experimented flocks were compared with a much larger population which received the off-types from the flocks selected. The average weights of the controls would, therefore, be influenced by the weights of rejected animals. The claim of Voronoff that the improved characteristics shown by the grafted rams are transmitted to the offspring involves the acceptance of a principle of heredity which has not yet been substantiated in the realm of science. Such a claim would require to be supported by the most critical and extensive research before being accepted.

To sum up, the delegation was not satisfied that Voronoff had proved his thesis, either in the case of the rejuvenated bull or of the grafted rams. Even should subsequent experiment carried out with better safeguards against error confirm Voronoff's results, they doubt whether these results would have any economic value to the British stock breeder. Their conclusions are in harmony with those already expressed in various reviews of Voronoff's work that have appeared in our own columns. Voronoff's claims have had wide publicity in popular and agricultural papers. It is highly desirable in the view of the official delegates, "that the matter be put to further and more critical test in this country, where conditions are more favourable to scientific control."

SICKLE CELL ANÆMIA.

Dr. E. V. Hahn,[1] who reports an illustrative case, remarks that since sickle cell anæmia was first described by J. B. Herrick in 1910, about 20 papers have been published describing the clinical features of the disease and the peculiar behaviour of the red corpuscles under various conditions. Sickle cell or drepanocytic anæmia is found only in negroes with the sickle cell trait—that is, whose red cells become distorted into sickle-shaped cells under certain conditions. This trait is compatible with perfect health and a long life; it is a hereditary characteristic, behaving as a dominant according to the Mendelian law of heredity. A correlation appears to exist between the severity of the anæmia and the number of sickle cells in the circulating blood. Symptomless individuals with the trait have few or no sickle cells in their blood. The clinical picture of the anæmia closely resembles that of familial hæmolytic jaundice with the following differences. In sickle cell anæmia the resistance of the red corpuscles is increased or normal, while in familial hæmolytic jaundice it is much decreased; in the anæmia the spleen is only occasionally enlarged, whereas in familial hæmolytic jaundice splenomegaly is constant; in the anæmia there are usually certain features not present in the other condition—e.g., ulcers of the leg, joint pains, and crises of abdominal pain. Dr. Hahn describes a method of producing sickle cells in vitro from apparently normal but susceptible red corpuscles freely suspended in saline solution and for fixation of them in their characteristic shape. The factors which precipitate the distortion of cells in the living subject and cause excessive distortion are unknown, but anoxæmia is a possible factor. Early splenectomy is said to be advisable in sickle cell anæmia; in the two cases observed by Dr. Hahn much clinical improvement followed this operation, although the sickle cell trait remained unchanged.

[1] Amer. Jour. Med. Sci., February, 1928.

THE COMPLETE HOSPITAL.

Captain Stone's book on "Hospital Accounts and Financial Control" is already familiar to most people concerned in hospital administration; as head of the accountant's department of St. Thomas's Hospital he has enjoyed abundant opportunities of learning the organisation and watching the modern developments of institutions for the relief of suffering. He is, therefore, much more than a mere financial expert, and the large and elaborate book now before us[1] is a remarkably complete account of methods of hospital management. It even includes details of the equipment of some of the great American hospitals, which suggest that if the United States has something to learn from us, we are not the sole depositories of practical wisdom in this matter. But the book is not a mere collection of facts. It discusses, fairly and reasonably, the outstanding questions of hospital policies, such as the future of the voluntary system, its relation to the poor-law, the need of coördination, and so forth. Never has the intricacy of the hospital machine been so clearly brought out as in Captain Stone's book, for, indeed, the literature of this side of the subject is sparse. Writing for doctors and secretaries, matrons and nurses, and boards of management, he is terse and practical. We learn how stores ought to be bought and arranged, records of cases made and filed, accounts kept, kitchens arranged, and meals served; we even have inventories of the contents of well-equipped wards and nurses' bedrooms. Captain Stone does well to insist upon the importance of good cooking both for patients and staff. "The operation may have been very successfully performed, and the medical and nursing care beyond criticism, but if the food and its service is unsatisfactory, the sum total in the eyes of the patient is a failure." It is notorious that in many hospitals both cooking and the service of meals are unsatisfactory, partly, no doubt, because of the inherent difficulty of providing meals in large number and often in great variety, but chiefly because the importance for the sick of well-cooked food attractively served is insufficiently recognised. But what hotels can do ought not to be impossible for hospitals, and the one metropolitan hospital which has a dietetic department finds that many cases which might otherwise have to be admitted can be treated quite safely at home by its help, while cases of diabetes which have been admitted can be discharged much sooner and their treatment continued at home. Thus economy and rapidity of cure may go hand in hand.

The best methods of hospital planning and construction are still an open question, and Captain

[1] Hospital Organisation and Management, including Planning and Construction. By Captain J. E. Stone, M.C., St. Thomas's Hospital. London: Faber and Gwyer, Ltd. Pp. 642. 21s.

Stone devotes two long and valuable chapters to a subject which lies at the root of the whole matter. Varieties of method are described whether applicable to general or specialised institutions; there are chapters on fire prevention, on hospital law as affecting the institution itself and its staff, on the advantages of coöperative purchasing, on the various methods of appealing for money, and the virtual exhaustion of "whirlwind campaigns" and "spectacular publicity methods." Stress is laid upon the practical importance of creating a central bureau for the collection and classification of information of all kinds relative to the inner working and activities of hospitals. Such a bureau has long been needed, and the lack of it is more keenly felt every year. At present King Edward's Fund, the Hospital and Medical Services Department of the Joint Council of the British Red Cross Society and the Order of St. John of Jerusalem, and the Hospital Officers Association all do something of what is needed in their respective spheres, but their activities necessarily overlap, and it is cheering to know that there is a good prospect of the Joint Council and the Hospital Officers joining forces. In many respects hospitals are too self-contained and are working too much in the dark in relation to each other. The creation of such a central bureau is an almost essential condition of that coördination which must come before long if the voluntary system is to attain the highest summit of usefulness. Captain Stone favours the establishment of a voluntary hospitals board, and sketches a suggested constitution representative not only of the hospitals themselves, but of the medical and nursing professions and the general public. There remains the large and highly important question of the fusion, in some form or other, of the voluntary and poor-law systems. From every point of view such a fusion is growing urgent. Many of the poor-law hospitals have now reached a high point of efficiency and the building-up process is constant, but the fact that they often have empty beds while the voluntary institutions are not only crowded but have long waiting lists is a weakness which is unbusiness-like, to say the least. The law as to the pauperisation of the inmates of the poor-law hospitals appears to be not quite clear, but, as Captain Stone suggests, the illisability, if it really exists, could be removed by an Act of Parliament of a single clause. Such a step would clear the way, and it is difficult to believe that there could be any opposition to so simple a solution of a serious practical difficulty.

Among other matters, Captain Stone gives a useful analysis of certain contributory schemes which are so rapidly growing in number and strength, and an account of the progress of the movement for providing beds for paying patients. There is, indeed, no aspect of hospital administration and policy which is left untouched in this admirable and comprehensive volume with its many charts and graphs, and an index which is a model of its kind. The book has a preface by Lord Cave and an introduction by Sir Arthur Stanley.

THE FUNDAMENTALS OF HEALTH.

THE address of a popular nature, given annually before the British Medical Association in memory of Sir Charles Hastings, was delivered at the House of the Association on Wednesday evening by Sir George Newman, Chief Medical Officer to the Ministry of Health, Lord Cozens-Hardy presiding. It proved, as might have been anticipated, a succinct exposition of an enormous subject, in which great questions were dealt with simply and long stories arranged in useful perspective and with due proportion. Especial stress was laid by Sir George Newman on the great rise in the national health in the nineteenth century accompanying notable advances in scientific discovery. He described the relation of these scientific advances to the health and happiness of man as reading like a fairy romance, and proceeded to summarise the tale of nature and nurture in terms of science. "We must not expect," he said, "to apprehend either the science or the practice (of medicine) from hucksters' tips or from the 'bits and bobs' of propaganda in an advertisement of a patent medicine. We must learn to look upon the whole business as a science, concerned with no less a subject than the evolution of man, governed by the immutable laws of the universe, and demanding from us patient learning, vigilant understanding, and strict obedience. For the penalty of the court for disobedience of the laws of Nature is a degeneration of type or an earlier death sentence." Of the advance of medicine which had accompanied the great scientific advance he said that six things, the Darwinian hypothesis counting as one, had given the world a wholly new outlook upon disease and its control, and fresh powers for the relief of suffering, and the prolongation and betterment of life; the remaining factors he gave as the knowledge of physiology derived from the work of John Hunter, the discovery of anæsthetics, the recognition of the causes of infection following on the labours of Pasteur and Koch, the application of that recognition by Lister in the shape of antiseptic surgery, and the resulting development of preventive medicine. Wise remarks on food and feeding, on the value of fresh air and sunlight, of exercise and rest, and of personal cleanliness followed, and led up to a public appeal for the organisation of good health by the community. The purpose of preventive medicine being to improve environment, to develop capacity, and to reduce disease the main lines of policy to this end become Everyman's duty.

SEX EDUCATION.

THAT thorny and difficult subject of sex education has been engaging the attention of the British Social Hygiene Council. We hope they may make some progress in clarifying a situation which presents itself so differently to persons of equal knowledge, integrity, and common sense. We have, on the one hand, those who after much consideration and experience still sincerely adhere, or even desire to return, to the older view that knowledge of sex and sex relationships is best picked up anyhow—"in the gutter" as Dr. Clendening would say. And their opinion is, we understand, to some extent supported by experience of the attempt to teach young and youngish children the truth about sex; the process has not everywhere proved as beneficial or as helpful as its advocates hoped. The plain truth is, of course, that it is quite impossible to get any real understanding of sex into those who have never experienced its consequences. The facts and mechanism of generation can be made the subject of instruction, but to try to explain what passion is to those who have had no chance of knowing for themselves, or what falling in love means to those who have never had the luck to do it, is likely to be as unprofitable as expounding Rembrandt to the blind or Beethoven to the deaf. A knowledge of the anatomy and physiology of males and females is a trivial part of the sexual problem; whether it will help people to solve the really important matters of sexual relationships is on the whole doubtful, and anything it may do in this direction is negligibly small and possibly more than counterbalanced by the evil of rousing a curiosity which may well be left dormant as long as may be. Such, briefly, are some of the considerations put forward by those who would deal with sex education along the broader lines of teaching reticence, restraint, and self-respect. On the other hand is another body of equally sincere and knowledgable opinion, more vocal because it is less conservative, which believes and preaches that the solution of the troubles which wait on sexual maturity lies in frank discussion and knowledge as complete as it may be made. It is, indeed, difficult to say why such a proposal, axiomatic for most human activities, should cease to be properly applicable in this field alone, and it is easy to understand why, made in general terms, it obtains so much assent as it does. But it is evidently felt

that this way of looking at the sex question would be immensely strengthened if there were some objective experience in its favour. The way towards such a trial has been prepared already to a considerable extent. Young adults of both sexes are now often willing, and sometimes anxious, to discuss the sex relationships of men and women with a frankness and freedom which may well make any older people who happen to be present wish they were out of the room. It remains to be seen whether, armed with so much forethought and foreknowledge, they make a better job of it than their Victorian ancestors. They seem to have a better chance; it will be extraordinarily interesting to see the result. It is tempting to suggest that some sort of experiment might be made by making something of a specialty of sex education at some colleges and having none at all at others, and then seeing how the two groups of students turned out in later life. But it is very difficult to simplify the variables to an extent which would justify the experimental method and give an unequivocal answer. Pastors and masters are always apt to forget that their pupils learn at least as much from one another as from their formal instructors, and we are bound to doubt whether any such trial would be really worth making, except under conditions of complete institutional seclusion. Meanwhile we hope that most young children nowadays learn the facts about generation and pregnancy as they learn what happens to the food they eat and how their blood goes round their body. But what best to do with adolescents and young adults is a speculative problem; they will probably go very much their own way whatever wisdom experience holds out to them.

DIETS OF LOW RESIDUE.

MOST text-books on diet give little definite information about the amount of fæcal residue left by different foods, so that the construction of a low residue diet is often based more on opinion than on fact. Such a diet may often be used with advantage after operations on the rectum and anus in order to postpone defæcation and save the patient from pain and discomfort when the bowels are first opened. It is also recommended in the treatment of some forms of diarrhœa and constipation. At the Mayo Clinic an attempt[1] has recently been made to find out the amount of residue from various foods so that definite data may be available. Experiments were made on dogs in which the last 25 cm. of the ileum had been resected, together with the whole of the colon to within 6–10 cm. of the anus, the free ends of the ileum and colon being anastomised. These animals were fed once a day with single foods and fæcal specimens were collected at hourly intervals for eight hours; on the following day any further material found on the floor of the cage or in the rectum was collected and analysed. Gelatin, cane-sugar, dextrose, hard-boiled egg, meat, liver, rice, and cottage cheese were found to give the least moist residue, while the lowest dry residues were seen with dextrose, cane-sugar, gelatin, liver, meat, bread-and-milk, lard, and butter. The largest dry residue (86 per cent.) was given with raw egg albumin, whilst other high residues were obtained from potatoes, raw bananas and apples, and lactose. The experiments suggested that less material is carried into the colon if the diet is kept fairly dry, and that milk should not be given when no movement of the bowel is required. A large residue is left in the terminal ileum after taking this food, which may account for the fact that a milk diet is badly borne by many patients. The Mayo Clinic investigators wish to bring this finding to the attention of the medical profession "because there is a tendency on the part of many physicians to prescribe milk and sometimes nothing but milk whenever they wish to give the digestive tract a rest. They are prone to prescribe it also in cases of diarrhœa, although it appears that it is one of the first foods they should interdict. It has been our experience that milk has a bad effect on many persons with diarrhœa, who promptly get well when given nothing but meat or meat with a little starch or sugar." They also call special attention to the indigestibility of raw egg albumin, which is popularly regarded as the last word in easy assimilation. A certain amount of caution is needed, however, in applying these experimental results to human beings, and it should not be forgotten that in an ordinary diet a considerable residue of undigested food may be desirable. It is perhaps noteworthy that many of the figures recorded in these animal experiments agree with those obtained in men and animals whose colon was intact. This supports the current opinion that the colon absorbs little besides water.

[1] Intestinal Absorption: A Search for a Low Residue Diet. By K. Hosoi, M.D., W. C. Alvarez, M.D., and F. C. Mann, M.D., Arch. Int. Med., 1928, xli., 112.

Sir Hugh Rigby has been appointed Serjeant-Surgeon to H.M. the King, in succession to Sir Havelock Charles, who has been appointed Honorary Serjeant Surgeon.

THE Rev. John William Arthur, O.B.E., M.D. Glasg., has been appointed by the King an Unofficial Member of the Executive Council of the Colony of Kenya.

WE deeply regret to announce the death of Mr. Lionel Richard Fifield, surgical registrar and first assistant at the London Hospital. He died in St. Mary's Hospital, Paddington, early on Wednesday morning as the result of a motor accident.

A PAPER on the Treatment of Recent Fractures by Operation will be read by Dr. Charles Scudder, of Boston, before the Section of Orthopædics of the Royal Society of Medicine on Tuesday, April 3rd, at 8.30 P.M. The subsequent discussion will be opened by Sir Robert Jones, Prof. E. W. Hey Groves, and Mr. H. A. T. Fairbank.

Charing Cross, Westminster, and King's College Hospitals are said to have decided against the admission of any further women students. Should they take this step there will remain only two hospitals in London open to women—the Royal Free and University College. The entry of women to the latter school is limited to 12. It is estimated that there are at present in London 600 women students, about half of whom are studying at the Royal Free. Final decisions on the proposed change have not been reached, and at a meeting of the Senate of the University of London on Wednesday last Mr. Walter Spencer and Dr. Graham Little, M.P., put forward a resolution calling for an inquiry, the result of which was not known when we went to press.

As we have already announced, a conference on rheumatic diseases will be held at Bath on Thursday and Friday, May 10th and 11th, under the presidency of Sir George Newman. The subjects for the three sessions will be the social aspects, the causation, and the treatment of rheumatism, and the congress will deal both with the acute rheumatism of children and with the arthritis and fibrositis of adults. Those who wish to take part are asked to send their names to Dr. Vincent Coates, the hon. medical secretary, 10 Circus, Bath, before May 5th. Special concessions have been made by the railway companies and hotels, and it is stated that the Ministry of Health and the Scottish Board of Health will look favourably on applications for the payment of expenses to representatives of local authorities. The annual meeting of the Balneological Section of the Royal Society of Medicine will be held at Bath on Saturday, May 12th, and members of the conference on rheumatic diseases will be invited to witness demonstrations of treatment by physicians of the Royal Mineral Water Hospital on that day.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CCLXVIII.

THE TREATMENT OF HEAD INJURIES.

II. Conservative and Operative Measures.*

In the stage of reaction from concussion the patient is apt to be extremely irritable, seeking to get out of bed. His bed can be put against the wall and the bed-clothes may be firmly pinned down, but other forms of mechanical restraint should be avoided, as they only tend to increase the irritability. Skilled nursing does much to control a patient in this stage, and it is important to remember that irritability is often in part produced by a full bladder or full rectum. The room should be darkened, for there is great photophobia.

Morphia should at all costs be avoided; it depresses the respiratory centre, sometimes excites the patient, and may mask a relapse into unconsciousness. For the severe headache that always accompanies recovery of consciousness potassium bromide and chloral hydrate may be given in large doses by the mouth (āā grs. xx. every four hours) or by the rectum (in twice this dose), whilst hypertonic salt solution is of great value.

Hypertonic Salt Solution.—The administration of hypertonic solutions of salt forms a definite recent advance in the treatment of head injuries. As was originally shown by Weed and McKibben, the salt promotes resorption of cerebro-spinal fluid and thus lowers the intracranial pressure. It is used in head injuries to combat the rise of intracranial pressure that invariably follows the injury, and it has proved of great value in relieving the headaches and irritability which are associated with that rise, and in lessening the stupor produced by cerebral œdema. For mild cases 6 oz. of a 25 per cent. solution of magnesium sulphate can be run slowly into the rectum twice a day, fluids by mouth being at the same time restricted. If the magnesium sulphate is not retained in the rectum it can be given by mouth or even by stomach-tube. It is surprising how little diarrhœa is produced by large doses of the drug. In severe cases 70 c.cm. of a 15 per cent. solution of sodium chloride, or a similar amount of 50 per cent. glucose, can be given slowly by the intravenous route. The glucose must be chemically pure. In using sodium chloride care must be taken that the solution is injected only into the vein, for if any escapes into the subcutaneous tissues it is apt to produce local necrosis.

Lumbar Puncture.—Another method of reducing intracranial pressure in head injuries is to withdraw cerebro-spinal fluid by lumbar puncture every two hours. The fluid should be withdrawn slowly and the amount to be removed should always be controlled by manometric readings. The method is open to the objection that it disturbs the patient considerably, and for this reason, whenever possible, the use of hypertonic salt solutions is to be preferred.

Treatment by Operation.

1. *Compound Fractures of the Vault.*—Open wounds call for immediate treatment in order to prevent infection, which may give rise to meningitis, extradural or cerebral abscess, or osteomyelitis of the skull. As soon as his condition permits the patient is removed to the operating theatre. The scalp is shaved for a wide area around the wound and is carefully cleaned with antiseptic. Local anæsthesia (a solution of 1 per cent. novocaine) should be used whenever possible.

If the edges of the wound are dirty they should be excised. All fragments of dirt and hair are removed and the underlying bone is carefully examined. A fissured fracture requires no surgical treatment, and when the wound has been thoroughly cleaned the scalp may be closed by primary suture. On the other hand, if there is the slightest overlapping of the edges of the fracture, a small trephine hole should be made so that the under surface of the fracture may be examined. The reason for this precaution is that at the moment of injury fragments of dirt may be pressed in between the broken edges of the skull and may become entrapped between skull and dura after rebound of the bone. Areas of bone which are obviously depressed should be elevated, but first it is necessary to get a good exposure so that the process of elevation may be carried out under direct vision. This precautionary measure is necessary because dislodgement of a sharp edge of bone may damage the blood-vessels of the cerebral cortex and dura, and thereby occasion severe hæmorrhage. All dirty fragments of bone should be removed. The osteomyelitis of the skull, which may develop if this procedure is neglected, is apt to be a most intractable condition.

The dura is then inspected. If intact, it is on no account opened; if it has been torn, the underlying brain is examined, fragments of clot and dirt are gently removed, and the dura is closed, a fine rubber drain being placed on its outer aspect. It is usually possible to remove the drain within four or five days. After operation for head injuries, the patients, being still in a condition of irritability, often seek to pull off their bandages. It is therefore advisable always to reinforce the soft dressings with a bandage of starch or plaster-of-Paris.

Antitetanic serum should be given at the time of the operation.

2. *Simple depressed fractures* should be elevated within a few days of the injury, because if left they are liable to produce intractable epilepsy. In children they can easily be detected by palpation of the head; in adults, however, they may be closely simulated by hæmatoma of the scalp. When the diagnosis is in doubt it is well to remember that simple depressed fracture is uncommon in adults, so that an apparent depression of the head over which the skin is intact is in all probability a depression in the centre of a hæmatoma. The diagnosis, never immediately urgent, can always be settled by good stereoscopic skiagrams.

To elevate a depressed fracture a scalp-flap, erring on the liberal side, is turned down over the depression. Elevation of the bone should be carried out gently, for it is often followed by sharp hæmorrhage from the underlying meningeal vessels. The bone should be replaced.

3. *Relief of Cerebral Compression.*—When, in cases which have shown the "lucid interval," the intracranial pressure is mounting in spite of hypertonic solutions, and operation has thus become necessary, the question arises as to the situation and manner of exploration. Osteoplastic operations are rarely required. Having regard to what can be achieved by operation, and recognising the need of reducing operative interference to the minimum, it may be said that all we are capable of doing can be done through a simple subtemporal decompression. The side to be explored is determined by the neurological signs. Inequality of the pupils is particularly valuable in this connexion, for experience has shown that, if one pupil is dilated and fixed while the other is contracted, exploration should always be made on the side of the dilated pupil, even in the presence of apparently contradictory paralytic signs. There should, however, be no hesitation in exploring both subtemporal regions in doubtful cases.

Through a linear incision in the direction of its fibres the temporal muscle is divided and retracted. When the underlying bone is removed blood-clot may be encountered, resulting from that comparatively rare condition, rupture of the middle meningeal artery. The clot is removed (suction is the best method) and the artery, if still bleeding, is stopped

* Part I., on General Management, appeared last week.

by means of a silver clip or by bone wax. Whether extradural clot has been found or not the dura should be opened. Clot may be encountered on the surface of the brain and should be gently removed. More often, on opening the dura, no clot is found, but there is an escape of blood-stained cerebro-spinal fluid in unusually large amounts. In this type of case there is presumably a severe cerebral œdema and possibly some disturbance of the mechanism of absorption of cerebro-spinal fluid. These cases usually do well after decompression.

4. *Cerebral Contusion.*—Whether he be unconscious or not, a patient who shows persistent localising signs, such as hemiparesis, astereognosis, or aphasia, should be treated by operation. These signs usually indicate a circumscribed area of cerebral contusion. By decompression at or near the site of contusion the process of recovery is hastened and probably rendered more complete. Usually a subtemporal decompression on the corresponding side suffices to relieve the symptoms of contusion, and it has the advantage over decompression at the site of contusion that the resultant defect in skull and dura is protected by muscle, and is therefore less liable to disturb the patient in after life.

Prolonged Rest.

In all head injuries that have been severe enough to produce distinct concussion it is of the utmost importance that the patients should take complete rest in bed for two or three weeks, or even longer after the accident, according to the severity of the original injury. By so doing they provide the right conditions for repair of the injured brain and run the least risk of developing distressing and debilitating sequelæ.

HUGH CAIRNS, M.B., B.S. Adel., F.R.C.S. Eng.,
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Special Articles.

MEDICAL RESEARCH COUNCIL.

ANNUAL REPORT FOR 1926–27.

(*Continued from p. 306.*)

IN a previous notice the sections of this report dealing with problems of the circulation and of nutrition were briefly summarised. We have published in our columns[1] accounts of the research into the alkaline treatment of gastric and duodenal ulcers, carried out by Prof. H. MacLean and Dr. I. Jones at St. Thomas's, and into the effects of the endocrine glands on menstruation.[2] Experiments at St. Bartholomew's on the blood in ammonium chloride acidosis have shown that a change in the hydrogen-ion concentration accompanies changes in the carbon dioxide content and capacity. Among the very large number of other subjects dealt with by various investigators only a small proportion can be mentioned.

Problems of Child Life.

Over 80 per cent. of all infants born in the burgh of St. Andrews are being kept under regular supervision, and the coöperation of the parents is described as "remarkable." It is thus possible to study the relation of environment to the physical and nervous disorders of small children. An investigation into the intelligence of children attending the Royal Hospital at Glasgow has revealed arrested development in most of the cases of encephalitis, with a steady fall in the mental ratio. It failed, however, to show any definite correlation between intellectual deterioration and motor disturbances or changes in character.

At the Children's Hospital, Birmingham, work is being done on the blood chemistry and bone changes in cœliac disease and renal infantilism. The primary cause of the bony deformities in the latter condition seems to be the inability of the kidney to excrete phosphate properly, and treatment by ultra-violet light aggravates the disorder. In cœliac disease, on the other hand, there is poor fat absorption and hence poor supply of vitamin D, with faulty absorption of calcium and phosphorus from the bowel. Ultra-violet light will cure the bony deformities, even on a fat-free diet. Dr. H. A. Harris, working at University College, London, has found that transverse striations occur in the long bones of non-rachitic children after acute illnesses, and mean no more than a cessation of growth from some cause or another. They should, therefore, not be used as a test for the antirachitic properties of foods. For the purposes of life insurance and medico-legal inquiries these lines may be of great value as a record of the past illnesses of an individual. Dr. E. W. Fish, at the same institution, has found a fundamental difference between the teeth of the dog and those of the monkey. The enamel in the dog is freely irrigated with lymph, while that of the monkey is wholly inorganic except for the lamellæ. It may be that this accounts for the immunity of the dog to caries.

Organs of Excretion and Secretion.

Numerous workers are investigating the toxæmias of pregnancy. Evidence has been obtained that alkalis can prevent the onset of anuria and protect the kidney under conditions when nephritis commonly occurs. It is now possible to select the cases of nephritis in which the alkali treatment is likely to be successful. In the course of work at Cambridge under Mr. J. B. S. Haldane, it has been shown that concentrations of magnesium which are optimal for kidney tissue are poisonous to brain tissue, and that the high concentrations found in the blood in kidney disease are secondary to the uræmia. The progress of more than 10,000 men who contracted trench nephritis during the war has been studied; one of the most striking results is the frequency with which the original condition has cleared up, leaving behind it some cardiovascular impairment with high blood pressure.

Prof. V. Korenchevsky has continued at the Lister Institute his attempt to isolate the active principles of the testes and prostate. Difficulty has been found in the unexpected presence of large quantities of insulin-like substances in the testis. The results obtained indicate that active substances are present in both lipoid and protein-like fractions of the sexual glands. It has been found that a parathyroid extract very active in increasing the blood-calcium, produces a persistent decrease in nitrogen metabolism, thus suggesting that parathyroid hormones and insulin act similarly upon nitrogen metabolism, and antagonise the thyroid. Further attempts have been made at Sheffield to control the symptoms of hyperthyroidism by a low diet. Promising initial results unfortunately proved inconsistent. Dr. G. Scott Williamson and Dr. I. H. Pearse are continuing their researches, which tend to establish a true secretion of thyroid hormone by way of the lymphatic vessels as distinct from a storage mechanism in the alveolar chambers. The former secretion contains no iodine and is the intoxicating factor in Graves's disease, while the colloid material contains thyroxin. The Joint Committee of the Council and the Obstetrical Section of the Royal Society of Medicine have decided definitely that there is no value in pituitary extract as a means of inducing labour. It generally shortens the first stage and always shortens the second stage, but has no effect on the third stage of labour. The committee appointed to investigate synthalin[3] found that it could not be regarded as a substitute for insulin, but that it deserved further investigation. It seems to lower blood-sugar by a process differing fundamentally from that of insulin.

[1] THE LANCET, Jan. 7th, p. 14.
[2] H. Gardiner-Hill and J. Forest Smith: THE LANCET, 1927, i., 862.
[3] THE LANCET, 1927, ii., 517.

Diseases of Animals.

Dr. A. S. Griffith has found that the bovine bacillus is the chief cause of tuberculosis in domestic animals, but that avian bacilli can be transmitted to mammals. Dr. C. Todd has found the path of infection of fowl plague and a means of protecting the birds by immunisation. Studies have been made of the immunity reactions to the virus of enzootic encephalitis (Borna disease) of horses, cattle, and sheep, and the animals have been successfully immunised. Mr. G. W. Dunkin has investigated Johne's disease and prepared a double intradermic diagnostic test, of which satisfactory reports have been received from veterinary surgeons. A method of immunising ferrets against distemper has been found, and many attempts made to extend this to the protection of dogs. While the work is not yet ready for distribution, the laboratory results are very hopeful.

Tuberculosis and Cancer.

The value of blood sedimentation and nuclear index tests as indices of clinical progress in tuberculosis has been confirmed. Blood platelet counts have shown that in surgical tuberculosis, as in phthisis, a thrombocytosis goes pari passu with severity of disease. Plasma becomes a more favourable culture medium for the bacillus when the blood platelets have been removed by filtration. The double intradermal test is steadily replacing the subcutaneous for detection of the disease in cattle.

Dr. Gye has continued his research into the "specific factor," and has found that tissue ferments play a large and sometimes decisive part in nullifying experimental work. The rapid loss of infectivity of filtrate with incubation is due in part at least to the destruction of proteins by a proteolytic ferment. The work of Rous has been repeated, extended, and confirmed. The results tend to show that filtrates of the mammalian tumours tested contain an antigen of extrinsic origin which gives rise in immunised animals to an antibody which, with the addition of complement, neutralises active filtrates of the Rous tumour. Mr. Dick in Edinburgh is investigating the cancer-producing action of coal tar on the alimentary canal, and has studied the actions of sodium tetraiodophenolphthalein, and its dangers in radiography. Mr. Leonard Hill has found no support for the common statement that diet influences the incidence of cancer. A diet of grain and green food gives no protection to mice. Cancer increased in successive generations, rising in female mice from 25 per cent. to 50 per cent.

Ultra-violet Light and X Rays.

Observations at Hampstead have shown a very close inverse relation between the ultra-violet radiation recorded by the acetone blue method and the smoke pollution. On hazy sunny days there may be great brightness when the ultra-violet readings are low. The shortest ultra-violet wave-length seems to be above 3000 A.U., and it must be the longer waves of sunlight that produce vitamin D from ergosterol and flush the skin, although shorter waves from artificial sources act in this way. The great superiority of the long-flamed arc over the Finsen short-flamed carbon arc in erythema-producing rays has been demonstrated. While hæmolysin and cytolysin are destroyed by the longer rays neurotoxin is destroyed readily by short rays, and antivenin is very resistant. Dr. L. E. H. Whitby, at the Middlesex Hospital, has found that the gamma rays of radium are highly bactericidal in the presence of calcium phosphongstate. At the Cambridge Research Hospital it has been found that 20–25-hour embryos can recover from the effects of X rays, while older ones with an active circulation cannot. Isolated tissue fragments, however, from six-day embryos grow actively in culture after radiation. The death of the tissues is due to the inhibition of gaseous exchange due to the action of the rays on the circulatory system.

Pharmacology.

A new base, "spermidine," related to but simpler than spermine, has been isolated and identified and adds yet another to the class of constant tissue constituents for which no physiological function can yet be even suggested. The peculiar peptide "carnosine" caused unexpected difficulties in a chemical investigation of muscle, and the successful solution is expected to throw light on the whole subject. A large quantity of carnosine has been prepared for examination of its properties and reactions.

Some 50 synthetic compounds of organic substances related to dyes have been prepared and tested for trypanocidal activity. The work has suggested a method by which a number of organic nuclei may be tested quickly for their potential value as starting-points in the synthesis of trypanocidal remedies. Observations have been made on the double nature of the mechanism which cures trypanosome infections. It appears that first some of the parasites are killed by the drug and that thereby an immunity response is produced which leads to the destruction of the rest. A curative dose of a trypanocidal agent may be rendered ineffective when a subtherapeutic dose of some other substance is administered shortly before.

Sir Almroth Wright's studies have shown that it is necessary, for bactericidal tests, to pack the corpuscles as far as possible free from serum. The application of a procedure devised for this is giving good results. It has been found that the acquired potency of the blood in its defence against streptococci can be considerably prolonged by using the least toxic arsenical compounds and by spacing the doses so as to maintain adequate concentration. The white corpuscles of patients suffering from severe streptococcal infections have been found to be much more sensitive to the toxic action of arsenical compounds than those of healthy persons. Mercurochrome has not been found to confer bactericidal power in animals, either upon the blood or on the bile. Dr. Todd has found no evidence of a relation between the virulence of hæmolytic streptococci and their capacity to produce a filtrable toxin.

A new gold compound of cystein has been formed from a normal constituent of tissue proteins, and so offers possibilities of introducing gold in a more natural vehicle.

Routine work on biological standards and assay has continued, and during the year over 4000 cultures from the national collection of type cultures were distributed, and more than 200 new strains were added. The output of standard agglutinable cultures and sera was four times greater than that for 1920–21.

Optics and Vision.

The department of applied optics has constructed two new microscopes, giving better facilities for the rapid repetition of observations, and a new type of reflecting condenser system has been designed to reduce the length of exposure in ultra-violet dark ground photomicrography.

Dr. H. Banister at Cambridge has shown that visual acuity is of less importance in selecting a good rifle shot than might be expected. Right-eyedness, however, is of great importance, and other tests for particular kinds of manual muscular control and coördination will detect the man to choose. It has been shown that a flicker as slow as eight per second does not impair visual acuity or colour appreciation. A biochemical study at St. George's Hospital has suggested that the aqueous fluid in the eye is formed by dialysis from the blood.

Physiological Investigations.

The katathermometer has been made available for use as an instrument of precision for measuring ventilation in warm and humid mines or factories, thus meeting a long-standing need of ventilating engineers. Dr. J. A. Campbell has shown that acclimatisation to low oxygen pressure is due to the body tissues, particularly the heart muscle, becoming tolerant of a low pressure in their immediate environment. He found no evidence in favour of the common view that the local oxygen tension in the tissues is restored nearly to normal during acclimatisation, nor did he find any close relationship between power to

increase the red cells and hæmoglobin or between the carbon dioxide tensions in the tissues and powers of acclimatisation, so that breathing cannot play the main part in the process. The heart seems to be the chief organ concerned; with insufficient oxygen its muscle degenerates. The underlying principle advanced by Dr. Campbell is that the body is unable to prevent a large rise of internal oxygen tensions under exposure to high oxygen pressure in the air, just as it is unable to prevent a large fall of oxygen tension in the tissues under exposure to low oxygen pressure in the air.

Mr. P. Eggleton has continued his study of "phosphagen," a constituent of muscle, which has been isolated as a barium salt from rabbit muscle and shown to contain creatine and phosphoric acid in equimolecular amounts. It breaks down in a muscle in contraction producing inorganic phosphate and is resynthesised during recovery in the presence of oxygen. This work clears up uncertainties about the relative places, in the chemical machinery of muscle contraction and relaxation, of carbohydrate and phosphate, and adds a new link between the functions of muscle and the presence of creatine. Phosphagen is apparently related to the velocity of contraction.

Intestinal Flora.

Mr. C. Dobell and Dr. P. Laidlaw have obtained every stage in the development of the *Entamœba histolytica* in artificial culture. It has been shown that the amœbæ cannot survive at ordinary temperatures for more than three days, but the cysts can live and remain infective to man for 37 days Emetine has been shown to have a specific toxic action in cultures on both human and simian strains. The entamœba can be transmitted from man to the monkey. One strain has been propagated in the department for three years, and has lost its original infectivity for kittens though not for monkeys, and has also lost its power of engulfing red corpuscles. Miss Bishop has shown that neither increase nor decrease in oxygen pressure, within the limits tolerable by a monkey, has any lethal effect upon intestinal protozoa.

Dr. L. S. Davidson, of Edinburgh, has devised a method for quantitative estimation of the chief groups of intestinal bacteria by which the differences of intestinal flora in health and disease can be tabulated. He believes that in the most chronic infections the cause is no new organism, but an increase in numbers or a change in site of the organisms normally present. In pernicious anæmia all organisms are enormously increased in number and there is a huge count of *B. welchii*. The toxæmia of intestinal obstruction seems to be probably due to this organism.

MEDICINE AND THE LAW

Dr. Alcock's Unsuccessful Appeal.

"A JURY," said Lord Justice Scrutton last week, "is rarely a good tribunal to decide actions which depend on professional skill." This important dictum was delivered during the judgment dismissing Dr. Alcock's appeal from the verdict of heavy damages awarded against him at Gloucester Assizes last December. The facts of the case will be remembered. A little girl, 8 years of age, fell off a donkey and broke her left arm above the elbow. She was conveyed ten miles in a motor-car to Gloucester where the limb was set in the doctor's surgery and she then went into a nursing home in Gloucester. The case alleged against Dr. Alcock was that he bound up the arm in a bent position without having got the fractured bone into complete alignment, thus producing a condition in which the arm muscles deteriorated. As Dr. Alcock was able to show, he had adopted the most approved surgical practice. An X ray photograph was taken before he began treatment; while he was manipulating the arm the X ray apparatus was used to throw the reflection of the bone upon the screen so that he could see exactly what he was doing. When he had finished the manipulation and bound up the arm, the radiologist reported that th X ray photograph showed a perfect reduction of th fracture. In these circumstances Dr. Alcock watche the arm subsequently to see that the circulation wa not impaired; as soon as he detected that this ha occurred, he loosened the bandages and endeavoured though without success, to ward off worse symptoms For the plaintiff it was said that faulty setting an subsequent negligence established Volkman's cor tracture; as this resulted in permanent deformit the child, who was stated to be a particularly promisin musician, would be unable to follow the professio of music. Impressed by this fact, presumably, th jury awarded the large sum of £2150 damages. Dr Alcock went to the Court of Appeal and asked fo a new trial, complaining that Mr. Justice Shearman summing-up was not adequate and that he ha overlooked the fact that the doctor had followed th most approved surgical practice; the judge, it wa contended on Dr. Alcock's behalf, had never told th jury that Dr. Alcock was entitled to rely on what th radiologist told him.

Lord Justice Scrutton's observations deserve clos attention. The Court of Appeal was obliged t dismiss the application for a new trial because th law of the land has placed juries in the position o deciding these issues of professional skill or negligenc and, unless it could be said that there was no evidenc whatever to support the jury's verdict (which wa not suggested), it was impossible for the Court o Appeal to interfere. "I do not profess for one moment, said the Lord Justice, "that this case is a satisfactor one." The action was one for professional negligenc "The consideration of the margin between wha would be an error of judgment (which is not actionable and a departure from the degree of professional ski which a professional man practising for reward hold himself out to exercise is very difficult to explain t the jury and very difficult for them to follow. . . It might very often happen that the judge woul not feel very happy about the verdict of the jury and the Court of Appeal also might not be very happ about a verdict against a professional man, but, we were to grant a new trial, the case would have t go back again to the same tribunal"—i.e., a jury In this case, said Lord Justice Scrutton, ther was evidence before the jury on which they, properl directed, were entitled to decide either way; it wa impossible for the Court of Appeal to interfere wit the verdict although the members of that Cour might have come to a different conclusion.

If the natural sympathies of a jury towards a littl girl of 8, whose potential prospects as a professiona musician are unhappily marred by an accident to he arm, are to be translated into the award of heav damages against a medical practitioner who ha followed the most approved surgical practice, the we really seem to be approaching the position i which a surgeon must be taken to guarantee the succes of every operation he undertakes. Lord Justic Scrutton's judgment makes it clear that the verdic against Dr. Alcock is far from commanding his whol hearted assent. There is something wrong with th system when such a verdict can be enforced agains a professional man. The medical profession has ofte had occasion to protest against questions of pro fessional skill being left to the arbitrament of a jur entirely devoid of technical knowledge. Lord Justic Scrutton's opinion of the unsuitability of a jury a the tribunal in such matters will strongly reinforce th view of the profession that the present position intolerable.

Patent Rights in Therapeutic Manufactures: The Nee of Novelty.

The claim of Sharp and Dohme (an America company, incorporated in New Jersey) against Boot Pure Drug Company, raised highly technical issue but also illustrated valuable principles of patent law The plaintiffs brought their action originally befor Mr. Justice Astbury, claiming that they were entitle

to Letters Patent (No. 219,922) for a method of making new alkyl resorcinols of high therapeutic value, particularly valuable as a non-toxic germicide; they claimed that the defendant company had infringed their patent. The defendant company answered that the patent was invalid for want of novelty and subject matter; that the methods described in the plaintiff's specification had been published before the date of the patent; or that the prior publication had indicated methods to be adopted for obtaining homologous alkyl resorcinols higher than those hitherto obtained. It was a question to some extent of how wide the plaintiff's specification might be. Their process was based on information contained in two previously published papers—those of Johnson and Lane (in the American Chemical Society's Journal of 1921) and of Clemmensen in 1913. Evidence by Sir William Pope and Mr. Ballantyne indicated that the reductions disclosed by Clemmensen were of such general value that, if used, they would probably result in the product for which the plaintiffs claimed a patent. It seemed clear that, if the plaintiffs had a valid patent, the defendants could not deny infringement. They had made and sold n-hexyl resorcinol made by a method indicated in Johnson and Lane's paper. Mr. Justice Astbury held there was no subject matter in the patent; he also held that the patent was invalid because of anticipation. In his judgment it appeared that the foundation of the process was laid in 1913; the only thing left to be done was to verify the anticipation of the earlier chemists. Verification of an earlier statement is not a ground for a patent grant. The plaintiffs took the case to the Court of Appeal, but their appeal was unanimously dismissed by a Court consisting of the Master of the Rolls and Lord Justices Sargant and Lawrence.

The subject matter of the privilege granted by a patent must involve, as is observed in Halsbury's "Laws of England," discovery and a new art. "An invention," said Lord Justice Lindley in 1892, "is not the same thing as a discovery; when Volta discovered the effect of an electric current from his battery upon a frog's leg, he made a great discovery, but no patentable invention; again, a man who discovers that a known machine can produce effects which no one before him knew could be produced by it, may make a great and useful discovery, but, if he does no more, his discovery is not a patentable invention." The subject matter of a patent is something for the sole working or making of a manufacture, but the manufacture must be something new and, further, it must not have been used by others at the time when the patent is granted. The reason is clear. The inventor must be encouraged but the justification for his monopoly is the benefit of the public. If his invention is not new, the public gets no benefit. Famous men like Lord Kelvin have been heard to express the view that our system of protecting discoveries by monopoly has done as much harm as good. If medical research were to be commercialised, the public benefit would be diminished. Judicial insistence that the element of newness should be present if patent grants are to be valid is well founded not only in law but in public advantage. Lord Danworth in the case under discussion confirmed Mr. Justice Astbury's view that no inventive step had been taken; there had been only verification of previous researches, coupled with the ordinary skill that a chemist could be expected to provide and supply. It is matter for general congratulation that the English bench can produce judges capable of mastering the extremely technical details of patent cases. Specialists like the late Lord Moulton may be rare, but such judgments as that of Mr. Justice Astbury are the more frequent judgments of Mr. Justice Tomlin in patent matters are supremely competent.

Dangerous Drugs Register.

One object of the Acts and regulations dealing with dangerous drugs is to make it possible to trace a purchase. For this purpose the medical practitioner is obliged to keep a register and to enter his purchases therein. At the West London Police-court on March 16th a doctor was charged with failing to enter in the register required to be kept for that purpose certain purchases of dangerous drugs—namely—morphine sulphate and diamorphine hydrochlorate. It was stated that a detective-inspector had occasion to interview the defendant doctor about prescriptions containing heroin and cocaine supplied to two women patients. Purchases had been made from wholesale chemists in October and January last, but the purchases had not been entered in a register as required, though the defendant was able to produce a book showing a list of prescriptions. On behalf of the medical practitioner it was mentioned that he had practised for 14 years in Jersey and was unaware of the details of the Dangerous Drugs Regulations operating in this country. It was not suggested that he had been guilty of any illicit traffic in drugs. The magistrate, Mr. Marshall, imposed fines amounting to £21 with £3 3*s.* costs.

THE HARVEY TERCENTENARY:

CELEBRATION BY THE ROYAL COLLEGE OF PHYSICIANS OF LONDON.

FROM the Royal College of Physicians of London there has been issued a provisional programme of the several functions and entertainments arranged by the College in the course of the celebration of the Harvey Tercentenary; this is issued in advance, so as to give delegates and others early information of a general character. A full and detailed programme will be published in May, and may be obtained then on application at the College. Delegates and guests should send information as early as possible of the number of ladies, if any, accompanying them, in order that the Ladies' Committee may make suitable arrangements for the entertainment of ladies at certain ceremonies where their presence may be impracticable owing to limitations of space. Visitors attending the celebration may give the Royal College of Physicians, Pall Mall East, London, S.W. 1, as their postal address, and letters will be handed to them when they call. They should, on arrival, leave their London addresses with the Secretary of the College.

Provisional Diary.

Monday, May 14th: 11 A.M., Reception of delegates by H.M. the King at Buckingham Palace. 3 P.M., Reception of delegates and distinguished guests by the President of the Royal College of Physicians at the College; presentation of addresses by delegates; admission of honorary Fellows; eulogy of Harvey by selected speakers. 6.30 P.M. for 7 P.M., dinner to delegates and guests given by the Worshipful Company of Grocers at Grocers' Hall, Prince's-street, E.C.

Tuesday, the 15th: 10.30 A.M.–12.30 P.M., demonstrations of recent additions to our knowledge of the circulation by the Royal College of Physicians at University College. A reproduction of Harvey's original experiments will be displayed cinematographically. 1.15 P.M., luncheon to delegates and guests at St. Bartholomew's Hospital (Harvey's hospital), given by the governors of the hospital. 4 P.M.,* tea to delegates, guests, and their ladies at the College, with exhibition of books, manuscripts, pictures, silver, and other objects of interest. 9 P.M.,* conversazione of delegates, guests, Fellows, and their ladies at the Hall of the Worshipful Company of Merchant Taylors, 30, Threadneedle-street, E.C., by permission of the court of the company. The Prince of Wales has graciously consented to be present.

Wednesday, the 16th: In the morning there will be a continuation of the demonstrations at University College, London. 6.30 P.M. for 7 P.M., dinner to delegates and guests given by the President and Fellows of the Royal College of Physicians in the Guildhall of the City of London.

Thursday, the 17th:* In the morning and afternoon there will be a visit of delegates, guests, and their ladies to Oxford, by invitation of the Warden and Fellows of Merton College, of which Harvey was Warden.

Friday, the 18th:* In the morning and afternoon there will be a visit of delegates, guests, and their ladies to Cambridge, by invitation of the Master and Fellows of Caius College, whence Harvey graduated.

* Ladies are invited to those functions marked with an asterisk.

Morning dress will be worn at daytime and evening dress, with orders and decorations, at evening events.

It is hoped, however, that delegates and guests at the afternoon reception at the Royal College of Physicians on Monday, the 14th, will wear academic dress. Throughout the whole week preceding the celebration, including Sunday, the 13th, the Secretary's office will be open daily from 2 P.M. to 5 P.M., so that delegates, guests, and their ladies may call for programmes, tickets for the various meetings and entertainments, and for any other information they may require. It is requested that such calls may be made as early as possible.

Entertainment of Ladies.

Monday, the 14th: Afternoon, visit to Messrs. Peek, Frean and Co.'s model biscuit factory; tea provided. Evening, 9 P.M., Lady Bradford, "At home," at 8, Manchester-square, W. 1.

Tuesday, the 15th: Morning, visit to Royal Mint. Afternoon, visit to Royal College of Physicians (see diary). Evening, conversazione at Merchant Taylors' Hall (see diary).

Wednesday, the 16th: Morning, visit to White Lodge in Richmond Park, to see the pictures, by invitation of Lord Lee of Fareham; drive to Hampton Court Palace.

Thursday, the 17th: Visit to the University of Oxford (see diary).

Friday, the 18th: Visit to the University of Cambridge (see diary).

Other entertainments are in process of arrangement.

NOTES FROM INDIA.

(FROM OUR OWN CORRESPONDENTS.)

The Simon Commission.

THE arrival of the Simon Commission has focused attention on the lines along which the self-governing institutions will develop, and these have their bearing on the future of medicine in India. Under the present Reforms Act of 1919 medical education and public health are "transferred" subjects—that is, they are dealt with entirely by Ministers of Local Governments. It will be the duty of the Commission to ascertain how far the present system has been utilised to advantage or otherwise since its introduction. Sir Norman Walker's tour in India was undoubtedly a stimulus to medical education here. The formation of a Central Medical Council for India was foreshadowed in his report and a Bill for the formation of such a body was brought before the Central Legislature. As, however, it contained a proposal that hakims, vayds, and other representatives of indigenous systems should sit on the Council, the Bill proved unacceptable. It is a sorry fact that the Reforms Act of 1919 practically overlooked medical and public health matters, and it is difficult to see how under the present Act such a body could be formed for the whole of India. But it is a point which may not escape the notice of the Simon Commission.

The Far Eastern Bureau.

The Advisory Council of the Far Eastern Bureau of the League of Nations has met at Delhi under the Chairmanship of the Public Health Commissioner of the Government of India, Dr. Madsen, of Copenhagen, and Prof. Shiga, of Korea, being among the 14 delegates present. The work of the Bureau is facilitated by the broadcasting of the weekly epidemiological report to the participating Governments. The incidence of epidemic disease in 147 ports of the East is now communicated by wireless to practically every country of the world within a few hours, with the result that quarantine measures can be speeded up and great economy effected. The international programme of plague research agreed on in Calcutta was adopted, and steps were taken to bring the findings of the plague experts to the notice of Geneva.

Proposed Central Research Institute.

The Calcutta Congress has stimulated effort directed to the prevention of disease in India. A committee, headed by Sir Walter Fletcher, has visited Lahore, Kasauli, Bombay, Madras, Ranchi and many intervening stations to examine the scheme for the establishment of a Central Imperial Medical Research Institute for India—to supplement, not to replace those at present existing in Calcutta, Bombay, Madras and Kasauli. The object of such an institution would be the coördination of research work with other countries.

Health Demonstration Trains.

A novel form of medical propaganda is the organisation by some of the railways of scientific demonstration trains. One of these recently toured the Punjab and another Eastern Bengal. The public health exhibits were extremely graphic with posters and advice regarding the preservation of life and health. Veterinary exhibits showed the results of cattle disease, the advantages of prophylactic injections, and the lines on which cow-sheds should be built. The demonstration train in the Punjab attracted 300 visitors in one village near Lahore and Amritsar and 12,000 at Kasur.

Medical Education.

Statements made in one of the official pamphlets issued to the Congress visitors regarding the backward condition of medical education in India have produced some searching of heart among the indigenous practitioners in Bombay. There is no doubt that the Indian student is frequently unable readily to follow conversational English with his English teachers, but the position would hardly be better if he had Indian professors teaching in the English language. It is no doubt at the doors of the schools and the arts faculties of the universities that the blame lies. Secondary education throughout India is at a low level. At the same time there is a strong feeling among the indigenous medical profession that although the General Medical Council should have statutory powers of control over medical education in India, there should be a representative of Indian Universities on that Council. The ideal solution might be for the Government of India to establish a Central Medical Council for India coöperating with, and under, the auspices of the G.M.C. It should not be more difficult to maintain the standard of medicine than that of other professions throughout India.

City Water-supplies.

Calcutta, many years ago, adopted slow sand filters, and is at present engaged in enlarging its water supply from 49 to 75 gallons per head. Madras, Poona, and Bombay have, in the past, delivered unfiltered water from unreserved upland gathering grounds, and this water, on occasions, has been accused of carrying water-borne disease. Bombay takes its supply from large lakes and, up to last month, the water was brought most of the way in open aqueducts. These aqueducts have now been replaced by large steel mains, and the supply is chlorinated. This important improvement was formally opened last month by the Governor of Bombay.

Malaria and Irrigation.

Special interest attaches to the visit to Bengal of Sir William Willcocks, a recognised expert in irrigation. Many parts of the Bengal delta are extremely malarious and it has been pointed out by Prof. C. A. Bentley that this condition is associated with comparative dryness, little or no flooding, and deteriorated agriculture. In Egypt, where the land is well irrigated, and two or three crops brought in each year, there is little or no malaria. If more water could be brought into the dry tracts of Bengal prosperity would be enhanced, crops increased, and malaria very likely diminished. These points have been appreciated before, but hitherto the control of so large a river as the Ganges has been regarded as impossible. Sir William is at present touring the Ganges delta, and while he has not yet pronounced any definite views, it is understood that he regards as possible the damming of the Ganges by a large

barrage, and the distribution of its head waters by old channels to dry areas.

Opium and Ayurveda.

The policy of the Government of India with regard to opium still remains undeclared, as the report of the Committee recently appointed has not yet been published. A certain amount of criticism comes from the Ayurvedic practitioners, who employ opium very largely in their pharmacopœia and who are maintaining strongly that the undue restriction of the sale of opium is not to the interests of the indigenous practitioner.

The late Colonel Cook Young.

The news of the death of Lieut.-Colonel A. W. Cook Young, in a nursing home at Aberdeen on Feb. 7th, came as a shock to his many friends in Northern India, where he was widely known and very popular. He entered the I.M.S. in 1901, and had only recently retired on completion of 27 years' service. The most of his service was spent in military employ, except for a few years before the war, when he was medical officer of health for New Delhi. He saw service in the Tibet expedition of 1903, when he gallantly went to the assistance of a brother officer, attacked by a mad Lama, and sustained a severe scalp wound which nearly cut short his career. He served during the Great War in Egypt and as sanitary officer in Mesopotamia, receiving a Brevet Lieut.-Colonelcy. Cook Young was an enthusiastic polo player in his earlier years, and since the war took up racing, winning many trophies, notably the Army Cup at Lucknow in 1919. He was a fine type of the now extinct regimental medical officer, popular alike with officers and men, and he never took kindly to the station hospital system introduced for Indian troops after the war. A brusque and somewhat abrupt manner covered a kindly and genial nature; his caustic wit was never unkind.

UNITED STATES OF AMERICA.

(FROM AN OCCASIONAL CORRESPONDENT.)

Vital Statistics of the Negro Community.

THE admission, in recent years, of several Southern States to the birth and death registration areas has now opened to the vital statistician a new and promising field. At the suggestion of several negro sanitarians, the Office of Statistical Investigations of the United State Public Health Service in the person of Dr. May Gover has made an interesting preliminary review of the vital statistics of the American negro population.[1] This population has been increasing since 1790, but not so fast as the white population or even the native white population. This, although the mulatto is added always to the negro population. The coloured birth-rate in 1920 was slightly greater than the white—107 to 104. The ratio of negro mortality to white is 1·87 in the cities, 1·49 in the rural areas. Life-tables published for white/negro in various States bring out interestingly the risks at various ages. They show amongst other things that in the Southern States after age 40 the country negro has a better expectation of life than the city white. This is not true in Northern States like Ohio and Michigan. Tuberculosis is the outstanding cause of death in the negro population, being as high as 202 per 100,000 in the Southern Registration States. Cancer, diphtheria, measles, and scarlet fever have all lower rates for coloured than for white. In studying the trends of mortality, the resemblances between the races were found to be more striking than the differences.

[1] Mortality Among Negroes in the United States. Pub. Health Bulletin, No. 174. Washington: Government Printing Office. 1928. 15 cents.

Suggested Revolution in Criminal Procedure.

The proposals put forward some time ago by American psychiatrists, and reported in a previous letter, have found a powerful friend in Governor Alfred E. Smith of New York. The popular Governor has suggested that a State commission, composed of experts in psychiatry and penology, should be charged with responsibility for dealing with offenders after conviction, which would automatically relieve judges of the responsibility of pronouncing sentence. Such a revolutionary change in criminal procedure would involve an amendment to the State constitution. The Governor has recommended to the State Crime Commission that the legislature be asked for funds to make an exhaustive investigation. The main points in the proposal are summarised in the *New York Times* as follows:—

That the jury should determine only the guilt or innocence of the person on trial.

That after a jury has returned a verdict of guilty the power of imposing sentence should be taken from the judge who presided at the trial and given to a special State board to be created by a constitutional amendment.

That the members of this board should include legal experts, psychiatrists, and penologists devoting their entire time to the work and paid as high salaries as any others in State employ—$25,000 a year.

That this board should determine whether a convicted felon should go to a State prison or to an insane asylum; and that it should determine the length of punishment and the extent he may be subject to parole.

The cost of operating the scheme might amount to $1,000,000 yearly, but if successful it should prove a good investment. At any rate it has been warmly welcomed by criminologists and social workers as well as by the National Committee for Mental Hygiene.

The Cost of Funerals.

Many factors, mostly associated with the enterprise of the "morticians," have contributed to make the American funeral an expensive affair. The practice of embalming is almost universal. The average cost of embalming is less than £5, but the result is that the body lies in state often for several days, and this leads to the demand for magnificent coffins which are called caskets. It may account also for the popularity of the watertight caskets which I have seen in profusion at a State Fair, the watertightness being demonstrated in a booth equipped with a large water tank! In wealthy families these luxuries are not a serious factor but in poorer families they lead not seldom to destitution. The problem became serious enough two years ago to lead the Metropolitan Life Insurance Company to appropriate $25,000 for an investigation. A strong committee, including several prominent medical men, was appointed, and they have now issued their report. They find that in estates of less than $1000 more than one half the estate goes on the average into funeral expenses. They blame first the desire of the family for an elaborate funeral based either on convention or in order to "impress the neighbours," and in the second place they blame the lack of organisation in the industry. The latter is already in process of self-improvement and the committee appeals to doctors and ministers to help "ease the burden of burial for those who can least afford to bear it."

Tularæmia in Mice.

Large numbers of sick and dead mice having been found in Contra Costa County, California, a pair of dead field mice were sent to the plague laboratory in San Francisco. Spleen tissue of the wild mice was inoculated into white mice, white rats, and guinea-pigs, all of which developed typical lesions of tularæmia. *Bacterium tularense* was isolated from the guinea-pigs, and its identity confirmed by agglutination with a known serum. This is the first record of the *Bacterium tularense* having been isolated from naturally infected wild mice.

SCOTLAND.

(FROM OUR OWN CORRESPONDENT.)

The Edinburgh Corporation Bill.

LAST week a deputation from Edinburgh met the Secretary of State for Scotland, when the Town Clerk of Edinburgh argued forcibly in favour of allowing the compulsory system to be instituted. Mr. Neville Chamberlain, the Minister of Health, who was present was not persuaded, and said that the Government Whips would be put on when the vote of the House was taken at a second reading of the Bill. At a meeting of the Edinburgh Corporation last Tuesday, however, it was decided to proceed with the Bill. The Corporation have behind them the majority of the local authorities in Scotland and of the medical profession in Edinburgh.

Preservatives in Cream.

The statement of one of your Scottish correspondents in THE LANCET of Feb. 4th to the effect that what had been the law in Scotland under the Food and Drugs Acts is to be enforced under the new Preservatives Regulations, both English and Scottish, has been called "bad law." The brief facts of the situation are: (1) in England regulations authorised the addition of boric acid to "double cream"; (2) there were never any such regulations in Scotland; (3) the Sale of Food and Drugs Acts require that an article sold must be of the nature, substance and quality of the article demanded; and (4) under these Acts no person is to mix any article of food with any ingredient or material so as to render the article injurious to health. In Scotland any producer who added a preservative to cream has all along been liable to prosecution under these Acts; but, as the *Dairyman* states (quite fairly):—

> "If proceedings were launched against the seller under the Sale of Food and Drugs Acts for selling an article dangerous or injurious to health, there was no certainty that he would be convicted. Whether the proportion of boric acid present did in fact render the cream dangerous or injurious to health was a question of fact for the Court, often decided in favour of the defendant."

The condensed statement made in these columns that the prohibition of all preservative in "cream" presumably removes the necessity of proving whether any given percentage of boric acid present does, or does not, render the article injurious to health, is in line with the statement of the *Dairyman*: "After the promulgation of the Amending Regulations in 1916, the Court—in England and Wales—had no option but to convict if 0·4 per cent. was overstepped or if any preservative whatever was present in cream with less than 35 per cent. of fat." Under the Preservative Regulations, England and Scotland have now the same standard, and one of the objects of the Food and Drugs Acts—namely, to keep articles of food as pure as possible—thus receives greater definition.

Anderson College.

Anderson College, founded in 1796 and affiliated to the University of Glasgow some 25 years ago, is remarkable for the wide distribution of its old students, while many pioneers of modern medicine have taken out classes at the institution. Dr. J. D. Comrie, lecturer on the history of medicine in the University of Edinburgh, delivered last week the closing lecture to the Winter Medical Session at the College, in which he made an eloquent acknowledgment of the debt owed by modern medicine to the earliest workers. He showed how many of the fundamental facts of our science had been discovered in the school of medicine at Alexandria 2000 years ago, and how light was thrown upon this work by the publication, 300 years ago, of Harvey's "De Motu Cordis." He referred in his address especially to the work of Thomas Sydenham in relation to the use of quinine in malaria, to the advances in surgery made in Scotland by Peter Lowe and Richard Wiseman before the Listerian era, and to Lister and Macewen as being responsible for all that to-day stands for scientific surgery. At the close of the address the medals were presented to the prize-winners of the College.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED MARCH 10TH, 1928.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox 347 (last week 365); scarlet fever, 1692; diphtheria 1311; enteric fever, 40; pneumonia, 1663; puerperal fever, 53; puerperal pyrexia, 142; cerebro-spinal fever, 12; acute poliomyelitis, 6; encephalitis lethargica 29; dysentery, 14; ophthalmia neonatorum, 100. No case of cholera, plague, or typhus fever was notified during the week.

The cases of small-pox were notified from the following 24 counties:—London, 1; Bedford, 2; Chester, 2; Derby 21; Dorset, 1; Durham, 68; Gloucester, 4; Hertford 1; Lancaster, 38; Lincoln, parts of Kesteven, 1; parts of Lindsey, 3; Norfolk, 1; Northumberland, 11; Nottingham 14; Southampton, 1; Stafford, 13; Suffolk East, 1; Surrey, 1; Warwick, 4; Yorks, North Riding, 13; West Riding, 89; Brecknock, 3; Glamorgan, 25; Monmouth, 29.

The number of patients in the Infectious Hospitals of the Metropolitan Asylums Board, March 13–14th, was as follows:—Small-pox 11 (2 of them being under observation); scarlet fever, 1587; diphtheria, 2538; enteric fever, 33; measles, 1466; whooping-cough, 147; puerperal fever 13 (plus 9 babies); encephalitis lethargica, 68; "other diseases" 33. At St. Margaret's Hospital there were 15 cases of marasmus and 13 babies (plus 6 mothers) with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns, including London, there were 2 deaths from small-pox, 6 (2) from enteric fever, 141 (77) from measles, 13 (6) from scarlet fever, 49 (15) from whooping-cough, 34 (4) from diphtheria, 35 (13) from diarrhœa and enteritis under two years, and 109 (23) from influenza. The figures in parentheses are those for London itself. The deaths from enteric fever outside London were reported from Southend-on-Sea, Worcester, Sheffield and Newcastle-on-Tyne, one each. Of the 64 fatal cases of measles outside London, 7 each were reported from West Ham and Plymouth, 5 each from Tottenham, Manchester, and Sheffield, 4 each from Worcester and Warrington; while the figures in Glasgow and Dublin for the same week were 19 and 5 respectively. Two fatal cases provisionally classified to small-pox were assigned to the county boroughs of Rotherham and South Shields.

The death at Rotherham attributed to small-pox was Dr. William Barr tells us, that of a woman (unvaccinated) 73 years of age, who became ill with the usual prodroma influenza on Feb. 5th. The rash appeared on the 11th she was notified as mild small-pox on the 13th, and removed the same day to hospital. At this time the patient felt quite well and remained so until Feb. 29th, when she had a slight attack of bronchitis. On March 3rd she had almost completely recovered, and, as the rash had practically gone it was contemplated to discharge her on the 8th or 9th. But she collapsed and died suddenly on the morning of March 4th. Dr. Barr was informed by her relatives and by her private medical attendant that she was subject to periodical heart attacks for several years. The death was certified as (1) bronchitis, (2) cardiac failure, (3) small-pox.

CREMATION SOCIETY OF ENGLAND.—The annual general meeting of members will be held at 28, Portland place, London, W. 1, on Wednesday, March 28th, at 3.30 P.M. when the report of the Council for the year 1927 will be submitted.

TEDDINGTON MEMORIAL HOSPITAL.—Lord Dawson recently laid the foundation-stone of this institution, which is to replace the existing cottage hospital. The building provides two wards of 12 beds each and two single-bed private wards for paying patients.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg.-Comdrs. J. Fullarton and G. E. Hamilton are placed on Retd. List with rank of Surg. Capt.

ROYAL NAVAL VOLUNTEER RESERVE.

Surg. Lt. G. F. Abercrombie to be Surg. Lt.-Comdr.

ROYAL ARMY MEDICAL CORPS.

Capt. A. J. Beveridge to be Maj.
Lt. G. C. Phipps to be Capt. (Prov.).
E. A. Stroud to be Tempt. Lt.

TERRITORIAL ARMY.

Capt. A. C. Haddow to be Maj.
Capt. (Prov.) R. S. Creed is confirmed in his rank.
Lt. W. H. A. Dodd, from Gen. List, to be Lt.

TERRITORIAL ARMY RESERVE OF OFFICERS.

Capt. F. G. Armstrong, having attained the age-limit, relinquishes his commn. and retains his rank.
Maj. E. Alderson, from the Active List, to be Maj.

ROYAL AIR FORCE.

Flight Lt. J. D'Isney Rear is granted a permanent commission in this rank.
Flying Officer G. S. Strachan is promoted to the rank of Flight Lt.
Flight Lt. D. B. Smith is transferred to the Reserve, Class D, II.
Flight Lt. E. Alston (temp. Capt., Dental Surgeon, General List) relinquishes his temporary commission on resignation of his Army commission.
The undermentioned are granted permanent commissions: A. F. Cook, E. J. Jenkins, and J. Magner as Flight Lts.
L. Freeman and G. S. Strachan as Flying Officers.
Flying Officers J. P. Hederman and E. J. Mockler to be Flight Lts.

INDIAN MEDICAL SERVICE.

Lt.-Col. L. J. M. Deas to be Col.
Capt. (Prov.) W. Lawie is confirmed in his rank.
Col. H. M. Cruddas retires.

COLONIAL MEDICAL SERVICES.

J. B. Kirk, M.O.H., Port Louis, Mauritius, to be Director of the Medical and Health Department, Mauritius. R. P. Cormack, Assistant Bacteriologist, Uganda, to be Senior Bacteriologist, Kenya. N. P. Jewell, Senior M.O., to be Resident Surgical Officer, Nairobi Hospital, Kenya. W. L. Webb, Senior M.O., in charge at Mulago Hospital, Uganda, to be Deputy Director of the Medical Service, Uganda, H. B. Owen, Medical Tutor at Makerere College, Uganda, to be Medical Superintendent and Principal of the Medical School, Mulago Hospital, Uganda. G. C. Edwards to be M.O., West African Medical Staff.

The annual dinner of the Royal Navy Medical Club will be held on Thursday, April 26th, at the Trocadero Restaurant Piccadilly-circus, London, W. 1. Further particulars can be obtained from the hon. secretary, Surgeon-Commander A. T. Rivers, R.N., Queen Anne's Chambers, London, S.W. 1

EXTENSION OF THE ELIZABETH GARRETT ANDERSON HOSPITAL.—At the annual meeting of this institution it was stated that the new wing is nearing completion and will probably be in use before the end of the year. It is proposed, with the approval of the King's Fund, to provide one or two floors of small paying wards in the building.

VALUATION OF HOSPITALS.—At a conference of Glamorganshire rating authorities it was decided to accept the county valuer's figure for hospitals of £3 per bed; isolation hospitals are to be taken at £2 5s. per bed. Hitherto hospitals have either not been rated at all, or have been assessed on a "sympathetic" basis. It is open to any institution to appeal, and it is now within the power of the local authorities to make a grant in aid.

Correspondence.

"Audi alteram partem."

ABSCESS OF THE BRAIN.

To the Editor of THE LANCET.

SIR,—May I beg the courtesy of your columns to join issue with your leading article of March 10th on this subject, some of the statements in which I feel should not be allowed to pass unchallenged? Your surmise is correct that no one has been able to improve upon Macewen's successes. No one has even been able to approach them. Macewen's *recovery*-rate of 72 per cent. for all cases (18 out of 25) is much the same as the *mortality*-rate for operation cases only in most of the series published of recent years from the large continental clinics,[1] a fact which makes it difficult to find justification for the optimistic tone of the article.

If this depressing mortality-rate is to be lowered earlier diagnosis and treatment of the condition are essential. Success in diagnosis, no less than in treatment, depends on an understanding of the pathology—an understanding not, as your article would have it, of intracranial pathology in general, but of the intracranial pathology of this particular condition, quite a different matter. The intracranial pathology of an abscess differs very definitely from that of a tumour. A tumour is new tissue which displaces the normal cerebral tissue around it, pushing it aside to make room for itself, and this increase in intracranial contents results in a corresponding increase in intracranial pressure. An abscess, on the other hand, increases in size at the expense of the brain substance, which is gradually destroyed by the infecting organism, so that the space previously occupied by cerebral tissue is now occupied by pus, and any increase in the intracranial contents is due mainly to surrounding inflammatory swelling. The degree of this surrounding encephalitis depends upon the virulence of the infection and is only considerable in acute cases, which are the exception rather than the rule. It follows that the increase in intracranial pressure in abscess cases is gradual and slow, and that it is incorrect to state that "a rapid" (and further on "a sudden") "rise of intracranial pressure" is "so characteristic of abscess formation." Nor is it correct to insist upon the "rapid onset of papilloedema," a sign which is generally recognised as being very inconstantly present in abscess cases, or upon "severe headache, drowsiness, and other signs of acute hydrocephalus." Dr. Symonds, in the address referred to in the article, lays stress on this latter point when he says: ". . . . that headache, drowsiness, vomiting and slow pulse are the cardinal signs of brain abscess . . . . is no more true than it is of cerebral tumour."

In the realm of diagnosis the article suggests a doubt of the wisdom of exploration before the appearance of the localising signs. It seeketh after a sign, but often there shall none be given. Of 20 cases which I have had the opportunity of investigating, and upon which my Hunterian lecture was based, 3 out of 12 cases of cerebral abscess, and no less than 4 out of 8 cases of cerebellar abscess showed none of the classical localising signs; they were silent abscesses. Of the former, all three were found by exploration and two recovered; while of the latter, only one was suspected and explored. Again, the localising signs, when they do appear, are late, manifesting themselves only after the latent stage, which lasts on an average four to six weeks, is past—that is to say, when an abscess has been in existence in the brain for that length of

[1] Some recent statistics of mortality-rates (per cent.) are: Beck, from Neumann's Clinic, 1907–1924, 82; Korner, collected statistics, 1925, 65; Nuhsmann, from Halle, 1920–1923, 55; and Lund, from Copenhagen, 1927, 82.

time. Lund[2] says that "Undoubtedly the symptoms mentioned (the various localising signs) are of considerable diagnostic interest, but, as a rule, *they appear relatively late, wherefore the diagnosis ought to be made at some earlier time if possible.*" To insist upon waiting for them is to be as one who would doubt the wisdom of an abdominal exploration for suspected gall-bladder disease until after the appearance of localising signs in the form of attacks of jaundice and gall-stone colic. My whole aim was to attempt to work out a symptomatology of the latent stage in order to provide a basis for the rational presumption of the presence of an abscess, as has been done by the abdominal surgeons in their own special sphere. This presumptive diagnosis would then be confirmed or disproved by exploration. I would say with Lund[2] that "in our struggle for a diagnosis the puncture needle should certainly be our last but also our most important weapon."

Finally as to treatment. We are to "map out" the situation of the abscess "by passage of a brain needle down to—but not through—the resistant wall of the abscess." It sounds delightfully easy, but how often can it be brought off successfully? My experience is that the sense of resistance, if any, is more often than not only sufficient to suggest that one's instrument *may* be impinging upon the abscess, so one pushes it a little further to make sure. Having found the abscess, we are to make "a wide opening in skull and dura," and deliberately to encourage the formation of a cerebral hernia, which is to be "desired." Desired?—when the literature is full of descriptions of operative methods designed to prevent the occurrence of this complication, which, when of any size, leads to a fatal result from purulent meningitis in most cases.

The conclusion of the whole matter is this: that so long as the policy of procrastination in regard to diagnosis and treatment is advocated by those in high places, so long will the mortality-rate of this, at the best, very dangerous condition maintain its present formidable level.

I am, Sir, yours faithfully,

Bath, March 12th, 1928 E. MILES ATKINSON.

THE ASTHMA RESEARCH COUNCIL.

To the Editor of THE LANCET.

SIR,—May I be permitted to add a further suggestion to those made by the Asthma Research Council in your current issue as to possible lines of research. In a recent correspondence in your columns I claimed that my insistence upon a definite use of words like "neurosis" was in order to encourage a more helpful attitude towards neurotic sufferers, and the present occasion adds force to my argument. In your annotation you remark upon the extraordinary varieties of conditions that may give rise to an attack, and add that there is a strong neurotic element in many cases. The medicine of the text-books offers nothing towards the study of this neurotic element, and the proposals of the Asthma Research Council do not refer to it. Yet among those who do not regard this element as something irreducible and inexplicable there is a considerable body of opinion, based upon clinical experience, that asthma is often the physical expression of an emotional state—the equivalent of an anxiety attack. The relation of emotion to the phenomena of sensitisation may perhaps be sought in the curious behaviour of the conditioned reflex, but neither physiologists nor psychopathologists can attack the problem without coöperation. I therefore suggest that the Asthma Research Council should add to their programme the investigation of the psychological aspect of the asthma attack.

I am, Sir, yours faithfully,

London, March 19th, 1928. MILLAIS CULPIN.

[2] Acta Oto-Laryngol., 1927, xi., 479.

STEREO-FLUOROSCOPY.

To the Editor of THE LANCET.

SIR,—My attention has been drawn to the note by Dr. F. H. Humphris in your issue of March 3rd on the latest developments in stereo-fluoroscopic work. It is, I think, only fair to British radiology to point out that Sir James Mackenzie Davidson developed the very same idea, which Dr. Humphris describes, several years before the war. About the year 1908 he asked my late father and Mr. Rocky to design and construct such an apparatus to operate from an ordinary interrupterless transformer unit with a mechanical rectifier. Two gas X ray tubes were fed by this plant, one half cycle of current being passed through one and the other half cycle through the other tube. The tubes thus lit up alternately 50 times per second and were placed side by side at a suitable distance from the patient. The fluorescent screen was observed through a revolving disc which moved in synchronism with the alternating current and contained two slits, so arranged that the eyes of the observer were alternately prevented from seeing the screen. Thus the left eye would only observe the screen when the right tube lit up and the right eye only when the left tube was operating.

The arrangement was a complete success and finally went to America. Obviously, the coming of the small-sized X ray tube and the improved fluorescent screen makes the problem easier, but the idea was conceived and satisfactorily solved in Great Britain approximately 20 years ago.—I am, Sir, yours faithfully,

W. E. SCHALL, B.Sc.

75, New Cavendish-street, W., March 15th, 1928.

To the Editor of THE LANCET.

SIR,—We have read with much interest the account by Dr. Humphris of the so-called "new method" of radioscopic examination by means of stereoscopic attachment. In fairness to British manufacturers, we think it right to point out to you that there is nothing novel about this so-called invention. To the best of our belief, apparatus of this kind was made, in accordance with the suggestions of the late Sir James Mackenzie Davidson, very nearly 25 years ago, and some years afterwards, probably about 1909, the idea was developed and tried out, practically, by the late Sir Archibald Reid. In both of these cases the apparatus in question was constructed by British firms, and much of the design and construction of Sir Archibald's Reid apparatus was carried out by Mr. Fredk. R. Butt, who is still actively engaged in the X ray industry.

Apparently the methods in question did not prove to be of sufficient practical advantage to survive. It may be, of course, that the system now proposed is of a more useful character, but we hope that you will find it possible to give publicity to this letter, as evidence of the priority of British X ray workers in the direction referred to.

We are, Sir, yours faithfully,

X-RAYS LIMITED.

47, Red Lion-street, High Holborn, W.C., March 8th, 1928.

THE POSITION OF THE VOLUNTARY HOSPITALS.

To the Editor of THE LANCET.

SIR,—In your issue of Feb. 25th, Dr. Graham Little fell into error when he deduced the existence of 3000 empty (reserve) poor-law beds from the figures of 19,000 "available" and 16,000 "occupied" beds. It would be just as fallacious to contend that because there are 14,472 available and 12,023 occupied voluntary hospital beds in London (vide King's Fund Report, 1926), therefore there are 2449 empty beds in the voluntary hospitals.

I am, Sir, yours faithfully,

RALPH B. CANNINGS,

March 15th. Secretary, City of London Maternity Hospital

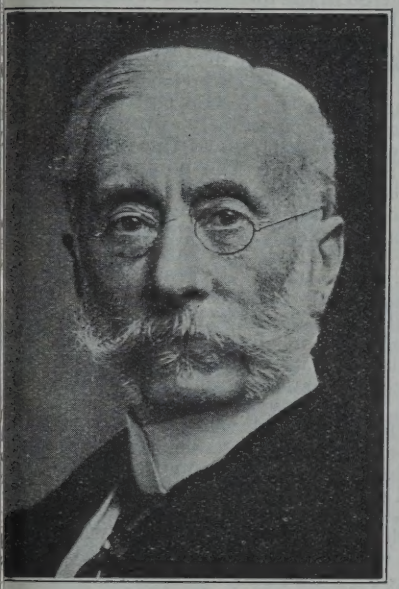
Obituary.

SIR DAVID FERRIER, M.D., D.Sc., F.R.S.,

EMERITUS PROFESSOR OF NEUROPATHOLOGY, KING'S COLLEGE, LONDON.

WE deeply regret to announce the death on Monday last of Sir David Ferrier, the veteran neurologist, whose researches date back from 1870, and whose personal labours by experiment and by writing have contributed, probably more than the work of any one man, to our modern knowledge of the functions of the brain. He died at York House, Kensington, in his eighty-sixth year.

David Ferrier was born on Jan. 13th, 1843, in a suburb of Aberdeen, was educated at the Grammar School of that city, matriculated at the University in 1859, and began his distinguished career as a successful student of the humanities and philosophy; he won the first place in bursary examinations, graduated in arts with first-class honours in both his subjects, and gained also the Ferguson scholarship, the blue riband of young Scottish philosophers.



SIR DAVID FERRIER.

Photograph by Elliott & Fry.

The famous Alexander Bain, psychologist and logician, had been appointed some three years before Ferrier's graduation professor of logic in the University, upon the publication of his works on the Senses and the Intellect and the Emotions and the Will, and to him Ferrier attributed the early direction of his interests, for in 1864 he went to Heidelberg to study psychology, his medical work being commenced there more or less as an after-thought. But in 1865, on return to Scotland, he entered the Medical School of the University of Edinburgh, and three years later graduated in medicine at that University with all possible distinctions. Thomas Laycock, professor of practical medicine in the University, at once appointed him his assistant, and for a time Ferrier worked under Laycock, supplementing his resources by taking pupils. But he soon found the work distasteful—great expositor as he became, coaching for examinations was not his métier—and at this time he made the interesting decision to enter private practice. This experiment did not last long, but none the less it had an influence upon his future. His chief, William Edmund Image, a general practitioner in Bury St. Edmunds, was an unusually accomplished man, a bachelier-ès-lettres, as well as an F.R.C.S., and had not only a large practice in and around the old-fashioned city but a close personal acquaintance with many leaders of his profession in London. He recognised the extraordinary qualities of his assistant, and acquiesced in Ferrier's view that so purely a country environment did not offer the proper outlook, while, as Ferrier would admit when reminiscing, his coöperation in the day's work promised to be of no value to the practice. He himself has said that, with the hearty coöperation of Image, he spent the whole of his time at Bury St. Edmunds in researches in comparative anatomy, and their result was an M.D. thesis on the corpora quadrigemina for which he gained a gold medal in medicine in 1870. In the same year he returned to London at the instance of Prof. Burdon Sanderson, and after holding a post for a short time in the Middlesex Hospital medical school was appointed demonstrator of physiology at King's College, and commenced his famous association with that institution. In 1873 he became lecturer on medical jurisprudence at the hospital, succeeding shortly to the chair vacated by Prof. William Augustus Guy, and was soon appointed assistant physician to the hospital, as well as to the West London Hospital. His association with Prof. Guy is marked by the widely known treatise on forensic medicine, the later editions of which bore their joint names as authors.

From this time forward Ferrier carried on clinical practice while pursuing his investigations into the psychology of the brain. He was a pioneer in hitherto untrodden regions of scientific medicine, and his fame was enhanced by the malignant manner in which he was signalled out by the opponents of research for particular reprobation as a vivisectionist. The results of his studies were given to the world without delay in a series of papers embodying researches into cerebral physiology and pathology, in the Croonian Lectures before the Royal College of Physicians of London in 1874 on the Localisation of Function in the Brain, in further papers on the same subject in the Philosophical Transactions of 1875, and in the Goulstonian Lectures on the Localisation of Cerebral Disease in 1878. But before the delivery of these last lectures he had published in 1876 his important work "The Functions of the Brain," which was recognised at once as a path-making contribution to an obscure and difficult department of physiological and psychological inquiry. The work had its direct outcome from the experimental physiology of Fritsch and Hitzig, who had recognised that in dogs, by exposure of the cerebral hemispheres, and trephining or removing portions of the skull, they were able to call forth certain movements by stimulation of different regions. Ferrier made the whole subject his own, and while many of the facts recorded by him or ascertained by his experiments were tolerably familiar to a small class of observers, the teaching came as a revelation to medical practitioners. The book owed much to Ferrier's early friendship with Hughlings Jackson, for certain of the experimental investigation of brain function was made mainly for the purpose of testing Jackson's theories as to the causes of various forms of epilepsy, while among other sources of inspiration may be mentioned as invitation from Sir James Crichton-Browne, at the time superintendent of the West Riding Lunatic Asylum, to embody in the asylum reports the early results of his experiments. On the publication of this book he was elected F.R.S., and in the following year, the year in which he became assistant physician to the Hospital for Epilepsy and Paralysis, he was elected F.R.C.P. Lond. In 1880 he became physician to the National Hospital for the Paralysed and Epileptic, Queen-square, while at King's College a Professorship of Neuropathology was specially instituted for him.

Ferrier's work is summarised in respect of its clinical value in his clearly written essay on the regional diagnosis of cerebral disease, contributed to Allbutt and Rolleston's System. In this essay a knowledge is assumed of cerebral anatomy, the vascular supply, and the convolutional arrangement of the cortex, while intracranial morbid anatomy is not considered. Attention is focused upon regional diagnosis by considering whether a lesion be essentially irritative or destructive in character, and whether it be such as is calculated to exercise a disturbing influence on regions anatomically remote from the part actually invaded. Within the limits thus laid down by himself, Ferrier tells the story, with full references and documentation, from the time

when our knowledge was confined to a few empirical generalisations, made from the observation of certain forms of aphasia and of unilateral convulsions, up to the knowledge of to-day.

The following appreciations of Sir David Ferrier from Dr. Wilfred Harris and Dr. Kinnier Wilson show well the esteem and admiration which, as philosopher and man, he commanded in the scientific world; they are estimates which would be endorsed by all who had worked with Ferrier or along lines where he had preceded them, and form a noble testimony.

Dr. Wilfred Harris writes: "Ferrier had outlived all of that band of great men, his colleagues at the National Hospital, Queen-square. To the younger generation the names of Hughlings Jackson, Thomas Buzzard, Bastian, Gowers, David Ferrier, and perhaps even Victor Horsley are legendary, and do not naturally evoke the feelings of almost awe and reverence that those who were privileged to work with and for them 30 years ago used to feel for their chiefs. It was Hughlings Jackson's work in the 'sixties on theoretical cerebral localisation, the result of his study of unilateral fits produced by tumours of the brain, that led to the experimental work first by Fritsch and Hitzig in 1870, and shortly afterwards by Ferrier in the laboratories of King's College in the Strand. Hughlings Jackson's was the brain which conceived the theory of the motor functions of a specialised area of the cortex, following on Broca's demonstration of a motor area for speech in the left ascending frontal convolution. Ferrier's training as a physiologist, and his early attraction to the nervous system eminently fitted him as the man to put Jackson's theories to the acid test of practical experimentation on living animals, and though Hitzig had already published some work in this direction, Ferrier's researches were much more fully and methodically planned, using faradic stimulation to the cortex. Endowed with most capable hands and good operating technique, he brilliantly proved Jackson's theories to be right, and settled for all time the groundwork of experimental localisation of brain centres, work which was amplified and confirmed by the later researches of Beevor and Horsley, and more recently by Sherrington and Grunbaum, who had the opportunity of using numbers of anthropoid apes for their experiments. No experimenter worthy of the name escapes making mistakes, to be rectified later by himself or by others, and Ferrier's work in this most difficult field of research was hardly likely to be an exception to this rule. He described the seat of the half-vision centre to be the angular gyrus, as the result of his cauterisation of this centre being followed by hemianopia, and it was reserved for Sharpey-Schafer to demonstrate the now well-known half-vision centre around the calcarine fissure, and that Ferrier's lesions of the angular gyrus had also damaged the subjacent optic radiations. The anti-vivisectors not unnaturally raised a storm over Ferrier's work on dogs, and much ink was slung in the 'seventies and early 'eighties in obloquy of his name, which probably defeated their object by bringing the brilliant young experimenter's name to the notice of the public. Certain it is that for very many years afterwards his name was almost a household word, and his advice as a neurologist was sought far and wide. Though he was for years professor of forensic medicine at King's College, and wrote a work on this subject, it is entirely as a neuropathologist that his name will live. As a clinician he was quick and incisive, and his teachings, brief and clear cut, were perhaps more easily remembered than those of more fluent orators.

"Ferrier's last appearance in the rôle of head of British neurology was in 1913, when he presided at the dinner given to the foreign neurologists present at the International Medical Congress held in London. Though then 70 years of age he was still slim, dapper, and erect as always, and that he retained his interest in neurology for years afterwards was evidenced by his frequent appearance at scientific meetings. Up to the time of his severe illness when attacked by double pneumonia three years ago he still retained remarkable vitality and a comparatively youthful appearance. His death marks a milestone in neurology as the last of the pioneers in this field, but his work must remain as an immemorial monument to a keen brain quick to adapt the theories of the thinker and philosopher to the test of practical trial and experiment."

Dr. S. A. K. Wilson writes: "Sir David Ferrier was the last of the small and choice company of pioneers through whose labours the scientific neurology of to-day has come into being. Nearly 60 years have passed since he commenced researches on the functions of the central nervous system that brought him world-wide distinction, and made his name familiar wherever neurology was taught. With those of Hughlings Jackson, Horsley, and Gowers, it will ever take that honoured position in the memorials of neurological science reserved by common consent for the path-makers and the masters. He was witness of the transition of knowledge of the nervous system and its diseases from the state of empiricism and lucky guesses to its fruition in the fertile soil of accurate neuro-anatomy and experimentally proven neuro-physiology, and was himself one of the protagonists in this amazing revolution. The commonplaces of neural doctrine to-day were the discoveries of his early manhood, and we of a succeeding generation can appreciate but faintly the new world then revealed by the objective methods of precise cerebral experimentation. More than 40 years separate us from the International Congress of 1881, when Ferrier gave a brilliant demonstration of the novelties of cerebral function and localisation before the assembled savants of Europe; and 15 years, too, have elapsed since their successors hailed him at the Congress of 1913, as the doyen of English neurology. If in these later times his work was less often referred to, if the echoes of old controversies had long since died away, if clinicians and surgeons cultivated the neurological field without a thought of the wilderness whose place it took, a moment of quiet consideration would always bring to the mind of those who knew him and worked with or for him an impressive sense of the debt neurology owes to his imagination and to his persistence in following the path of minute and exact experimental research. Only a few of his friends are aware of the personal abuse which this line of investigation brought him, or of the extremes to which his opponents went in their endeavour to discredit his achievement.

"It is on his many services to the experimental physiology of the nervous system that his reputation rests securely, nor can it be diminished by any contention that the technique was comparatively simple and that the material lay ready to his hand and was only waiting to be utilised. Subsequent studies have not altered his conclusions fundamentally even if the growing point of neurology has moved away somewhat from the rather schematic parallel he drew between excitation and response, between structure and function. To many of the younger generation he was known only as a clinician and clinical teacher, and this was possibly not the most original side of the man. A shrewd observer and a keen student of human nature, his contributions to clinical neurology are none the less by comparison not so memorable or so abundant. He had not Jackson's breadth of vision, or Gowers' faculty of patient and painstaking clinical scrutiny; what struck all those whose contact with him was of later period was his mental vigilance and his consuming desire for information. Long after his best years had passed he was still a frequent attendant at meetings of the Neurological Section, the College of Physicians, and the Royal Society, and within a few months of his death was still to be seen on occasion in the library of the Royal Society of Medicine. Nothing was more typical of Ferrier than this hunger for knowledge. On the day of Jackson's funeral in 1911, I walked away with him from the cemetery

and after many minutes of silence, occupied with his own thoughts of his teacher and friend, he suddenly turned and said, 'well, when I cease to take an interest in things it will be time for me to go.' Those of us who were associated with him professionally and otherwise, who experienced his generosity or who knew a little of that side of him that was but seldom revealed, will like to think of Sir David Ferrier as one whose life illustrated in perfection, the meaning of the love of knowledge for its own sake, and who carried undimmed to the end the torch of science put into his hands 60 years before."

The honours which Ferrier received from various seats of learning sufficiently testify to the wide range of his fame. As early as 1878 he became a Lauréat of the Institut de France, while from the Royal Society he received the Marshall Hall prize in 1883, the Baly medal in 1887, and the Royal medal in 1890. The University of Edinburgh made him Cameron Prize-man and awarded him the Moxon medal; he was a D.Sc. of the University of Cambridge, and only last year received the honorary LL.D. from the Univer-sity of Birmingham. At the Royal College of Physi-cians of London he was Harveian orator and Censor. He presided over the Neurological Society in 1894, and over the Medical Society of London in 1913. In connexion with the Neurological Society he was one of the founders and editors of *Brain*, the journal of that society, of whose prominent position he was always frankly proud, and to which he made so many noteworthy contributions.

Few leaders of the medical profession were better known in London to his colleagues than Ferrier; even when he had reached an advanced age his small, upright figure was to be seen regularly at professional gatherings, at social evenings, and in the drawing-room of the Athenæum. Though studiously quiet in voice and demeanour, and never desirous of joining in controversy or in asserting personal views, his conversation with friends was free, intimate, and amusing, for he preserved to the end of his long life an accurate memory, just powers of reflection, and keen appreciation of the ridiculous. Some three years ago he underwent a serious illness—one from which his advisers expected nothing but a fatal issue; but he made so perfect a recovery that his death will come to many as an unexpected event.

He married in 1874 Constance, daughter of Mr. Albert Waterlow, by whom he had one son, Mr. Claude Waterlow Ferrier, the well-known architect, and one daughter.

The funeral service was held yesterday (Thursday) at St. George's, Hanover-square, W.

MAYNARD SMITH, C.B., M.B.LOND., F.R.C.S.ENG.,

SURGEON TO ST. MARY'S HOSPITAL.

WE regret to announce the death of Mr. Maynard Smith, surgeon to St. Mary's Hospital, which occurred on March 18th in the fifty-third year of his age, sadly cut off at the zenith of a valuable life.

Sidney Maynard Smith was born on Sept. 20th, 1875, the son of a civil engineer, who also held an Admiralty appointment at Chatham. He was educated at Epsom College where he distinguished himself as a boy, gaining the entrance scholarship in natural science at St. Mary's Hospital, the institution with which he was closely connected throughout his professional career. He entered the school in 1893, qualified as M.R.C.P. Lond., M.R.C.S. Eng. in 1898, was appointed house surgeon the following year, and later became prosector and assistant demonstrator of anatomy in the medical school. In 1902 he proceeded to the F.R.C.S. and two years later graduated in medicine and surgery in the University of London. He became surgical registrar at St. Mary's Hospital in the same year, and also surgical tutor, and in 1906 was appointed surgeon to out-patients, acquiring shortly charge of the orthopædic department. He was also elected assistant surgeon to the Victoria Hospital for Children. In the meantime he had seen military service in the Boer War, for shortly after the outbreak of hostilities in South Africa he was appointed civil surgeon to the South African Field Force. Here he not only did good work but acquired the material for informing and accurate writing on head injuries and gunshot wounds, while he was decorated for his services. On returning to civil life he became lecturer on practical and operative surgery in the medical school of St. Mary's Hospital. He was also elected assistant surgeon to the London Fever Hospital, so that, with such training and opportunities, it is not surprising that he was now recognised as a leading surgeon, destined to go far in his profession. He contributed a series of articles on military surgery to the "Index of Treatment," and published papers on general surgery in the *Transactions* of the Medical Society, the *Journal of Anatomy and Physiology*, the *British Medical Journal*, and *The Lancet*, establishing his position as a sound clinician and consultant. Military and national duties again supervened.

In 1914 the European War broke out, and Maynard Smith went to France as surgeon-in-chief of the St. John Ambulance Brigade Hospital with the honorary rank of Major. The following testimony to his later work is given in the words of Major-General Sir G. Guise-Moores, who writes as follows:—

"I should like to bear testimony to the loss both the medical profession and the army have sustained by the death of Sidney Maynard Smith. Late in February, 1918, Sir Anthony Bowlby, then the Senior Consulting Surgeon to the British Forces in France, informed me, as D.M.S., Second Army, that we were to have the services of Maynard Smith as consulting surgeon. His skill as a surgeon had preceded him, and was known by his work at the Duchess of Westminster's Hospital at the Base. The Second Army, like many another, had been fortunate in its consultants, both surgical and medical, and it did not take long to make certain that in 'Maynard,' it possessed, besides surgical prowess, a man of sterling qualities of heart and mind. At his own request he was early permitted to pay occasional visits to the front line, to regimental aid posts, and to advance and main dressing stations. He soon acquired a sound judgment in what was essential to efficiency in the care, treatment, and evacuation of wounded. Anything short of this gave his gallant and kindly soul the deepest grief and concern. With any shortcoming he was never content until a remedy was found; and found it invariably was. At the casualty clearing stations where his chief work must necessarily be, his cheery presence was always welcomed, his advice eagerly sought, and his capacity for unobtrusive and arduous work recognised and appreciated, and in the short intervals between the 'crises' of incoming wounded, when alone it was possible to ponder and talk over things past and to come, we found in him a fund of quiet humour, a sense of timely loyalty, a gift of sage counsel, and an entertainment that goes with successful accomplishment."

His medical military career was throughout one of real distinction, as will be gathered from the above testimony and public acknowledgment. He was thrice mentioned in dispatches, gained the Croix de Guerre, and was appointed C.B. in 1918. And again his special experience enabled him to write with authority on many surgical and pathological conditions that had come under his notice in every variety of urgency and extremity. He contributed the section to the official medical history of the war on fractures of the lower extremity, the most valuable of his contributions to scientific literature.

To the smaller circle of his colleagues at St. Mary's Maynard Smith will be more than an ordinary loss, and will ever be remembered as much for his other qualities as for his surgery. He was an invaluable committee man, who never undertook the slightest service without giving of his utmost in energy, time and thought. His fresh outlook and wise judgment have many a time solved a knotty problem of hospital

routine. It did not need the war to prove his great abilities as an administrator, yet here they perhaps showed up at their best. He had a tidy mind which was reflected in all he did. He possessed an exquisite surgical technique, but his fingers were always guided by wise and thoughtful decisions.

Maynard Smith was the victim of a disease which from time to time gave warning that it only slumbered and one day would inevitably have its way. Yet very few even of his friends knew this: fewer still guessed that he knew it. He preserved his secret, and with extraordinary fortitude carried on his busy life, refusing to withhold such services as were constantly demanded of him by a teaching hospital and school. He will always be remembered with affection and admiration.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

INVALIDING FROM THE NAVY.

ON March 15th Lieut-Colonel HEADLAM (Parliamentary Secretary to the Admiralty) dealt with the question of invaliding from the Navy, which was raised on a motion moved by Sir B. Falle last week when the House was "counted out." The previous debate, he thought, had showed that all sides of the House felt that there was something wrong. He could assure the House that the Admiralty were watching this matter very closely, but there was a great deal of misconception, not only in regard to the actual facts which were adduced in the debate, but also in regard to what the results would be if the new suggestion were adopted, and the question of deciding what was attributable and what was not were transferred from the medical authorities at the Admiralty to some outside body. He thought, personally—and he had taken a good deal of trouble in examining the whole system—that hon. Members who took part in the previous debate were unduly pessimistic about the present procedure. He agreed that from the psychological point of view there might be something in the suggestion that the officers and men themselves would be more satisfied if they had some kind of outside Board to which to go, but he would point out that the independent tribunals which they knew so well under the Ministry of Pensions were brought into existence to meet special circumstances arising from the war. It was then obvious that there were hundreds and thousands of cases in which the medical history of men could not possibly be ascertained in the ordinary way. Therefore it was probably quite necessary to set up those special tribunals. But in the case of a service like the Navy, in ordinary times, the medical history of a man was known from the first moment he came on board and his whole history was kept throughout his career, and the doctors before whom he came in the event of his being brought forward for invaliding were men who were perfectly familiar with the kind of service he had had, and were therefore better fitted almost than anyone else to judge whether the illness from which he was suffering was due to the service or not. He would also point out that such a man had on his side, as far as was possible, the doctors, and was given every chance of stating his case and of calling witnesses if necessary.

Mr. GROVES: I dispute that statement.

Procedure of the Board of Survey.

Colonel HEADLAM said he would tell the House exactly what the Board of Survey did. When an officer or rating in hospital or serving in a ship or establishment was considered to be unfit for further service he was brought forward for survey with a view to invaliding. Medical Boards of Survey were held twice in each month under the authority of the Commander-in-Chief or Senior Officer present. The Board consisted of the medical officer in charge of the hospital, who acted as president, and three medical officers, two of whom were senior medical officers of the hospitals and one a senior medical officer of the Fleet or depôt. It had been suggested that there should be an executive officer on the Survey Board. That matter had been very carefully considered by the Admiralty, and the general opinion was that nothing would be gained by reverting to a practice which was abandoned in 1914. The questions to be decided were of a purely medical nature and the presence of an executive officer would not strengthen the tribunal. He would either interfere with the medical officers in the performance of their duties or would be a mere figure-head and wasting his time.

Lieut.-Commander KENWORTHY: Could he not decide if the doctors disagreed?

Colonel HEADLAM said that if the hon. and gallant Member would wait he would see that that was provided for. The medical officer who brought the case forward appeared before the Board in order that the surveying officers might receive the fullest information concerning the case. A complete history of each case was made out, showing the details of the onset, course, and final state of the disability for which the patient was being surveyed. Prior to survey each officer or rating was given a form to fill in, on which he was requested to state what in his opinion was the cause of his disability. The Board of Survey was required to investigate and record an opinion whether the disability was attributable to, or aggravated by, service (pre-war, war, or post-war), and if not, to what specific condition it was attributed. Those reports of the Board of Survey, with a statement by the officer or man concerned, were sent to the Commander-in-Chief, who was an executive officer and who came to a decision with all the facts before him.

Dr. VERNON DAVIES: Are we to understand that the Medical Survey Board simply decide the case from the history sheets of the man, and however difficult the diagnosis may be, they form their opinion as to attributability or not purely on the record of the man's medical history?

Colonel HEADLAM said that the Board saw the man's statement and the man could put forward such evidence as he liked. After the decision of the Commander-in-Chief the case was sent to the Admiralty. Every case was carefully scrutinised and investigated by the medical authorities at the Admiralty, who examined all the records bearing on the case.

Mr. MACKINDER: It is done purely on the history of a man's case and not by personal examination.

Colonel HEADLAM: They have all the papers before them.

Lieut.-Commander KENWORTHY: Everything except the patient.

Medical Consultative Board and Hygienic Conditions.

Colonel HEADLAM said that he wished the House to understand that if there was any bias in a case of this kind, the bias was on the side of the man as far as the judges were concerned. In general, he would say that there was very little justification for the attacks that were made against the existing system. It might be perfectly fair to say that the rules by which these matters were judged were too severe and that the doctors were not given sufficient latitude, but to blame the existing authorities was not fair, and the charge that the Board of Admiralty was not the proper judge in the final resort in these cases had, he thought, not been substantiated. It was the rules that were of importance and not the tribunal. This, however, was a matter which the Admiralty agreed required the most careful attention. They were looking into it from every aspect. Not only was there a Joint Committee sitting now, and examining the question of attributability in all its aspects, but they had referred the whole question as regarded hygienic conditions in the Navy to a special Medical Consultative Board of outside specialists and they were awaiting the reply from those specialists to guide them to a certain extent in the policy that they should pursue. They felt that the present system as regarded invaliding and the adjudication of attributability or otherwise was a fair one, but they wanted to be perfectly sure. They realised that the health of the Navy was of primary importance. It was, however, very easy to exaggerate the facts about tuberculosis in the Navy. The truth was that the incidence of the disease seemed to be rather less in the Navy than in civil life. They knew more about it in the Navy because the conditions of inspection were such that they found out the cases very early, whereas in civilian life they might escape observation for a considerable period of time. He could assure the House that they were fully alive to the situation.

The motion was agreed to.

HOUSE OF COMMONS.

WEDNESDAY, MARCH 14TH.

Infant Mortality and Under-nourishment.

Major ROPPER asked the Minister of Health whether he had now received the reports of the medical officers of health for Houghton-le-Spring and Chester-le-Street; and whether they showed that there had been any increase in the infant mortality-rate due to want of proper food and nourishment of mothers and children.—Sir KINGSLEY WOOD (Parliamentary Secretary to the Ministry of Health) replied: My right hon. friend has received reports from the medical officers of health of the districts mentioned. The infant mortality figures for these districts during 1927 have just reached me and show a small increase in each district as compared with 1926, though the rates were lower than

for the years 1924 and 1925. Only the report of the M.O.H. for Houghton-le-Spring suggested under-nourishment as one of the causes of the increase, and his report was not written until Feb. 22nd. My right hon. friend is advised that other medical authorities in Durham attribute the temporary increase in infant mortality in that county during the last few months of 1927 to the exceptional prevalence of bronchitis and pneumonia.

Maternal Mortality.

Sir ROBERT THOMAS asked the Minister of Health whether, in view of the lack of improvement in the maternal mortality-rate, he would, with a view to creating a more efficient maternity service, consider the advisability of modifying the present maternity benefit in such a way as to provide medical and nursing services in addition to a cash payment, and of linking up such services with maternity and child welfare work of local authorities.—Sir KINGSLEY WOOD replied: The question of the advisability of modifying the present arrangements for maternity benefit under the National Health Insurance Scheme in the direction indicated by the hon. Member was raised at a recent meeting of the Approved Societies Consultative Council and was referred by them to a special Subcommittee. As soon as my right hon. friend receives the report of the Council on the subject, it will have his most careful consideration.

Mr. GREENWOOD asked the Minister of Health whether he had been informed of a resolution passed on Feb. 28th, at a meeting of 600 representatives of local authorities and voluntary societies in touch with the problem of maternal mortality, at which attention was called to the urgent need for medical inquiry into all deaths due to childbirth, further training and experience in midwifery as a preliminary to general practice in medicine, the appointment of an official committee to advise upon the whole question of the training and employment of midwives, action to induce local authorities to make their maternity services adequate, the readjustment and extension of national health insurance so that medical and midwifery services should be available for mothers, both for antenatal care and during and after confinement; and whether, in view of the fact that 3000 mothers died in childbirth annually, and many were injured, he could see his way to taking immediate action on the lines suggested by the conference.—Mr. CHAMBERLAIN replied: The answer to the first part of the question is in the affirmative. As regards the second part, I had already had these matters under consideration in connexion with the recent report issued by my Department on the "Protection of Motherhood," and I am taking the necessary action to give effect to the recommendations contained in that report on the first four points mentioned in the question. As regards the health insurance point, I would refer the hon. Member to the answer given yesterday on this subject to the hon. Member for Anglesey.

New Method of Paying Pensions.

Captain FRASER asked the Minister of Pensions whether he had in contemplation any changes in the method of paying war pensions; what those changes were and when they would be introduced; what classes of pensioners would be affected; what objects he hoped to achieve by the changes; and whether the ex-service man's associations had been consulted.—Major TRYON replied: An important change in the method of payment of war pensions will come into operation next week. The pensioners affected will be all those whose pensions are paid weekly through the Post Office—namely, those of disabled men, their widows and dependants. The central feature of the new system of payment will be the discontinuance of identity certificates, or ring papers. These documents will be surrendered to the Postmaster for cancellation and withdrawal, and the pensioner will receive instead a book of orders, on presentation of which payment will henceforth be made each week at the appropriate Post Office. The new system will be essentially the same as that already in use for old-age pensions and for widows' contributory pensions. It is estimated that a substantial reduction in administrative costs will be secured by the extension of this system to war pensions, but, while the object in view has been uniformity and economy in administration, I am satisfied that pensioners will find the new arrangements simple and convenient. The ex-Service representatives on the Standing Joint Committee and a representative of St. Dunstan's have been consulted on this aspect of the matter and have expressed their approval of the change. No change is at present contemplated in the arrangements for paying the pensions of officers or nurses, or of officers' widows or dependants.

Drunkenness in London.

Mr. BRIANT asked the Home Secretary the number of proceedings for drunkenness and convictions for drunkenness, male and female, in the Metropolitan police district and the City of London for the calendar years 1918 to 1927 inclusive.—Sir WILLIAM JOYNSON-HICKS replied: All available figures in this connexion are published annually in the Volumes of Licensing Statistics, the latest of which is for the year 1926. As regards the year 1927, the figures are not yet completely compiled, but I can give provisional figures as follows: In the Metropolitan Police District the total number of proceedings was 30,123, leading to 21,177 convictions of males and 5977 of females, and in the City of London the figures were 411,293 and 84 respectively. The following is a statement of proceedings and convictions for drunkenness in the Metropolitan Police District and City of London during the years 1918 to 1926:—

Year.	Metropolitan Police District.*				City of London.			
	Proceedings.	Convictions.			Proceedings.	Convictions.		
		M.	F.	Total.		M.	F.	Total
1918 ..	11,358	6690	3211	9901	294	194	44	238
1919 ..	23,683	15,486	5188	20,674	446	322	57	379
1920 ..	33,185	23,581	6375	29,956	491	399	44	443
1921 ..	30,091	21,916	5494	27,410	416	329	49	378
1922 ..	33,912	24,389	6410	30,799	557	432	102	534
1923 ..	32,983	23,414	6610	30,024	498	396	70	466
1924 ..	33,018	23,512	6536	30,048	426	332	57	389
1925 ..	32,900	23,197	6384	29,581	442	334	60	394
1926 ..	32,010	22,631	6226	28,857	388	269	48	317

* This district consists of the Counties of London and Middlesex, and parts of the Counties of Essex, Hertford, Surrey and Kent, including the County Boroughs of East Ham, West Ham, and Croydon. M. = Male; F. = Female.

Health Conditions in Artificial Silk Factories.

Mr. KELLY asked the Home Secretary whether the Home Office had received any reports as to the conditions of health of workpeople employed in artificial silk factories; and, if so, would he make known to the House his decision on these reports.—Sir WILLIAM JOYNSON-HICKS replied: I have received reports by the Medical and other Inspectors of Factories who have been visiting these works. It appears from these reports that the conditions generally are satisfactory, but cases of conjunctivitis have occurred at one or two works, and there have also been some cases of dermatitis. Suitable precautions are being taken in each case and the hon. Member may be assured that the conditions will continue to receive the special attention of the Medical Staff.

Notification of Diphtheria.

Dr. VERNON DAVIES asked the Minister of Health if he would issue a circular to all local authorities, pointing out that, in view of the difficulty of diagnosing diphtheria and the desirability of immediate treatment, it was advisable for medical practitioners to notify suspicious cases without waiting for the results of the bacteriological examination, even though, as a consequence of this practice, a percentage of cases eventually proved to be non-diphtheritic.—Mr. CHAMBERLAIN replied: The difficulty in giving effect to the suggestion of my hon. friend is that the obligation on medical practitioners under the Infectious Disease (Notification) Acts is to notify patients actually suffering from infectious diseases. I could not accordingly issue such a circular as he suggests without an alteration of the law.

Approved Societies and Additional Benefits.

Mr. RHYS DAVIES asked the Minister of Health how many approved societies had been compelled to abandon their schemes of additional benefits through lack of funds, temporarily or otherwise, since the results of the last valuation were declared; and the approximate number of insured persons covered by those societies.—Mr. CHAMBERLAIN replied: No approved society has been compelled through lack of funds to abandon its whole scheme of additional benefits, but about 100 societies (covering a total membership of between three and four million insured persons) which have included dental and ophthalmic benefits in their schemes, have found that the demand for those benefits amongst their members has so far exceeded the expectation that the amounts allocated to the benefits for a particular year have been exhausted before the end of the year, and they have consequently been obliged to defer the authorisation of claims until the beginning of the following year, when further money became available. In nearly every case the authorisation of claims for the benefits has now been resumed.

Surplus Milk and Necessitous Areas.

Mr. BENJAMIN SMITH asked the Minister of Health whether his attention had been called to the considerable surplus of milk produced annually in excess of the quantity retailed for human consumption; and whether he would consider the question of organising arrangements for supplies

to be placed at the disposal of medical officers of health in necessitous areas for distribution to children and sick persons.—Mr. CHAMBERLAIN replied: I understand that the facts are as stated in the first part of the question. As regards the second part, local authorities are empowered to supply milk for expectant and nursing mothers and young children who are medically certified to need a supply on grounds of health.

Pregnant Women and Sickness Benefit.

Dr. VERNON DAVIES asked the Minister of Health if he was aware that many employers refused to allow insured women employees to remain at work during the late months of pregnancy; and if under these conditions such women were granted sickness benefit under the National Health Insurance Regulations.—Mr. CHAMBERLAIN replied: I am aware that some employers do not allow their women employees to remain at work when in an advanced stage of pregnancy. Any such rule of her employer does not in itself entitle an insured woman to sickness benefit under the National Health Insurance Act, but if she can produce medical evidence, to the satisfaction of her approved society, that she is incapable of work, she would be entitled to benefit.

National Health Insurance Dental Treatment.

Mr. HURST asked the Minister of Health whether persons insured under the National Health Insurance Act were to be deprived of their free choice of dental attendant, of the advantages of private treatment, and to be given institutional treatment at clinics in lieu thereof? Mr. EDMUND WOOD asked the Minister of Health whether it was his intention to set up dental clinics under the National Health Insurance Bill; and, if so, whether this would in any way affect the right of the insured contributor to choose his own dental attendant.—Mr. CHAMBERLAIN replied: Approved societies are not at present empowered to establish dental clinics for the provision of dental treatment for their members, but some societies are of opinion that in large industrial centres the setting up of dental clinics might be attended with some advantages. The question has been very fully considered by the Dental Benefit Joint Committee, which is composed equally of representatives of the dental profession and of approved societies of all types, and that Committee has recommended that in order to test the desirability of this form of treatment, one or more experimental clinics should be set up. Under the National Health Insurance Bill now before the House, provision has accordingly been included which would enable this to be done, subject to regulations which would have to be laid before Parliament. There is, however, no intention of making it compulsory upon any insured person to obtain his treatment in a clinic if he would prefer to be treated by a private practitioner, and I am satisfied that freedom of choice of dentist must be retained as a cardinal principle in any arrangements that may be made.

Welfare of Blind Persons.

Captain FRASER asked the Minister of Health if he would adopt the recommendations, on pages 17 and 18 of the seventh Report of the advisory committee on the welfare of the blind, that a detailed inquiry should be made into the financial and other circumstances of the 31,667 so-called unemployable blind persons in England and Wales.—Mr. CHAMBERLAIN replied: Yes, Sir, I propose to ask the local authorities concerned to furnish me with the return suggested by the Advisory Committee.

FRIDAY, MARCH 16TH.

Diphtheria Epidemic at Whittlesey.

Mr. DAY asked the Minister of Health the number of deaths that had occurred through the diphtheria epidemic at Whittlesey, in Cambridgeshire.—Mr. CHAMBERLAIN replied: Since the beginning of this year three deaths from diphtheria have been registered in the Urban District of Whittlesey.

MONDAY, MARCH 19TH.

Infantile Mortality in the Colonies.

Sir JOHN POWER asked the Secretary of State for the Colonies whether in recent years there had been any general decrease in the infantile mortality in the colonies, protectorates, and mandated territories in Africa; and whether any special efforts were being made to deal with the problem of infant mortality in other countries.—Mr. AMERY replied: It is exceedingly difficult as yet to obtain reliable returns of births and deaths among the populations of tropical Africa, but in areas from which the returns may be regarded as fairly accurate, as in the Buganda kingdom of the Uganda Protectorate, and in certain West African towns, there is evidence of slow improvement in the infant mortality-rate. In most areas, however, the rate remains regrettably high. The Governments of tropical Colonies are fully alive to the importance of this matter. Infant welfare clinics are being established and women doctors, nurses, and health visitors appointed for special duty; the work of these officers, notably in Malaya, the Gold Coast, and Sierra Leone, has been of a high order. In this connexion I would specially mention the work of voluntary agencies, such as the Child Welfare League of Kenya and the Child Welfare Society in Singapore, and the efforts which have been made in the West Indian Colonies to deal with this problem.

Employment of Women in Indian Mines.

Lieut.-Commander KENWORTHY asked the Under Secretary of State for India how many women, approximately, are employed underground in the Indian mines.—Earl WINTERTON replied: The average number so employed daily in 1926 was 31,889. The Government of India are considering making regulations to prohibit the employment of women underground by progressive stages in certain classes of mine (including the chief coal mines) and forthwith in others.

Disabilities of Naval Recruits.

Replying to Mr. HORE-BELISHA, Lieut.-Colonel HEADLAM (Parliamentary Secretary to the Admiralty) said: The disabilities for which recruits to the Royal Navy and Royal Marines were discharged within 12 months of their engagement during the years 1926 and 1927, are shown in the following list:—

Disease or injury.	*1926.*	*1927.*
Diseases caused by infection:—		
Pneumococcal infection (lungs)	4	1
Rheumatic fever	6	8
Tuberculosis (pulmonary)	11	7
Tuberculosis (non-pulmonary)	3	5
Other diseases caused by infection	3	3
Nervous and mental diseases:—		
Diseases of spinal cord	1	1
Paralysis	—	1
Epilepsy	9	5
Neurasthenia	3	4
Other nervous diseases	11	15
Insanity	2	4
Diseases of the eye	34	24
Diseases of the ear	66	66
Diseases of the nose	—	2
Diseases of circulatory system:—		
Diseases of the heart (organic)	29	32
Diseases of the heart (functional)	2	6
Diseases of the arteries	1	1
Diseases of the blood and spleen	1	—
Diseases of the lymphatic system:—		
Other diseases	—	1
Diseases of glands and internal secretion	4	[illegible]
Diseases of the respiratory system:		
Bronchitis	—	[illegible]
Asthma	2	[illegible]
Fibrosis of lung	3	[illegible]
Pleurisy	3	[illegible]
Other diseases	1	—
Diseases of the digestive system:—		
Diseases of teeth and gums	2	[illegible]
Mouth, palate, fauces, pharynx	1	—
Tonsillitis	2	—
Diseases of the stomach	—	[illegible]
Diseases of the intestines	1	—
Hernia	3	[illegible]
Diseases of rectum and anus	—	[illegible]
Diseases of generative system:		
Varicocele	—	[illegible]
Diseases of organs of locomotion:—		
Periosteum and bone	1	—
Cartilage and joints	2	[illegible]
Spine	1	—
Muscles, fasciæ, tendons, bursæ	—	[illegible]
Deformities of limbs	11	1
Diseases of aerolar tissue and skin:—		
Eczema	1	[illegible]
Other diseases of skin	—	[illegible]
Diseases of urinary organs:—		
Kidneys	5	[illegible]
Ureter and bladder	[illegible]	[illegible]
Urinary disorders	22	1
New growths, non-malignant	1	—
Local injuries, injuries and wounds	9	[illegible]
Totals	261	25

Smoke Abatement.

Mr. NAYLOR asked the Minister of Health whether h could give particulars showing to what extent count councils and sanitary authorities in England and Wal had availed themselves of the powers given them under th Public Health (Smoke Abatement) Act to take proceedin and to pass by-laws respecting smoke abatement.—S KINGSLEY WOOD replied: By-laws respecting the emissio of smoke have been made by 14 local authorities and co firmed. I have no particulars as to the extent to which loc authorities generally have taken proceedings, but a goo deal of useful work is being done.

Mr. NAYLOR asked the Minister of Health whether, as th result of his circular to county councils and sanitary auth rities, drawing their attention to the Public Health (Smok

Abatement) Act, 1926, any regional committees, with either executive or advisory functions, had been formed.—Sir KINGSLEY WOOD replied: Two regional advisory committees and one executive committee have been set up since the issue of the circular, in addition to two advisory committees previously appointed. A committee has also been appointed by a conference of representatives of local authorities to report on questions of smoke abatement in the Greater London area.

Medical News.

UNIVERSITY OF DUBLIN, SCHOOL OF PHYSIC, TRINITY COLLEGE.—At examinations held recently the following candidates were successful:—

FINAL MEDICAL EXAMINATION.—PART I.

Materia Medica and Therapeutics; Medical Jurisprudence and Hygiene; Pathology and Bacteriology.—*A. G. Thompson, *Lilla M. Spiller, T. B. M'Mahon, C. M. Taylor, M. E. Kirwan, R. P. M'Garrigle, E. B. A. Solomons, and J. E. R. Keyms.

PART II.

Medicine.—*F. G. Stewart, *D. S. P. Wilson, H. S. Smithwick, Marie M. E. Lea-Wilson, F. O. W. A. Mahon-Daly, G. W. F. Pratt, William Crawford, H. E. Knott, E. S. Adderley, Hyman Dundon, A. G. C. Ffolliott, A. A. Morgan, H. R. F. Tweedy, E. du Plessis Meiring, H. J. Robinson, R. F. W. K. Allen, A. J. Burden, C. R. Harris, G. Q. Chance, and L. R. H. Keatinge.

Surgery.—*F. G. Stewart, J. E. Wells, Julius Sayers, A. G. C. Ffolliott, Kenneth Watson, D. M'M. Carson, E. K. Malone, A. C. C. Charles, J. R. Hanna, Christina M'Donald, William Crawford, Wilfreda D. C. T. Pigott, H. E. Knott, L. R. Brumberg, A. A. Morgan, C. R. Harris, and C. M. O'Brien.

Midwifery.—*C. P. Martin, *F. R. Falkiner, *I.W. Pigott, Cecil King, J. T. M'Ginn, R. M. Wilson, J. F. K. MacCarthy-Morrogh, J. E. M'Mahon, A. R. Ewart, H. S. North, R. H. Bland, Mollie Finegan, C. E. G. Nunns, J. A. Dowds, and A. J. Burden.

* Passed on high marks.

RUSSIAN CONGRESS OF RADIOLOGY.—The fifth Congress of Radiology of the U.S.S.R. will be held at Kiev from May 19th to 23rd. Among the subjects of discussion will be (1) changes in cells under the influence of rays; (2) the classification and radiodiagnosis of diseases of the joints; (3) the functional and anatomical changes in the gastro-intestinal canal after operation; and (4) the radio-therapy of diseases of the blood-forming system. Those wishing to read papers should send a résumé of the proposed communication to the Secretary before April 15th. The medical men in charge of the arrangements are anxious to see their foreign colleagues at the Congress, and will procure the necessary permits for arrival and departure, besides providing for comfortable quarters at Kiev. Correspondence should be addressed to the Secretary, Dr. B. M. Berenstein, Kiev (U.S.S.R.) Roentgen Institut, 7, Leon Tolstoi-street.

MEDICAL SOCIETY OF LONDON.—The 155th anniversary dinner, held at the Trocadero Restaurant, under the chairmanship of its President, Mr. Herbert W. Carson, was attended by about 135 guests and members. Lord Carson, proposing the toast of the Society, testified to the growing understanding and goodwill between the legal and the medical professions, who coöperated in many ways. One vital question, however, on which they would soon have to get together was the legal definition of insanity. The legal profession, after doing their best, had been able to come to no better conclusion than that the lunatic was a person of unsound mind; that was the only definition that Parliament had been able to give, and that was the legal definition to-day. Lord Carson had found doctors at their worst in the witness-box; he often felt inclined, he said, to invite the medical men who appeared for one or other side to walk over to his chambers for a private conference, when he felt sure they would leave agreed. The President, in his reply, said that the Society had admitted 100 new Fellows in 1927. The lease on their present premises expired in 14 years, and they would then be faced with the expense of finding new premises. For the last 100 years, he said, the manuscript of John Ward's diary had been lying in the Society's safe. This was not a medical work, but a commonplace book, written by a vicar of Stratford-on-Avon some 40 years after Shakespeare's death and containing many references to the social life of London and Stratford-on-Avon at the time of the poet. It would be put up for auction at Sotheby's in April, when he hoped the manuscript would not leave the country. The toast of "The Visitors" was proposed by Sir John Rose Bradford, and responded to by Surgeon Vice-Admiral Haskell and Dr. F. G. Crookshank.

UNIVERSITY OF OXFORD: *University College.*—Mr. Pat. C. Mallam, B.M., of Queen's College, has been elected to a Radcliffe Travelling Fellowship of £300 a year. It is tenable for two years, during 15 months of which the holder must engage in foreign travel and study. Dr. Mallam was formerly President of the Oxford University Boat Club, and was subsequently a student and resident at St. Mary's Hospital.

UNIVERSITY OF ABERDEEN.—The Senatus has resolved to confer the degree of LL.D. on Dr. J. A. MacWilliam, F.R.S., Emeritus Professor of Physiology of the University.

LONDON VEGETARIAN SOCIETY.—The First Arnold Hills Memorial Lecture will be delivered by Dr. B. P. Allinson, the President, in the hall of the Royal Society of Arts, John-street, Adelphi, W.C. 2, on Monday, March 26th, at 8 P.M. His subject will be Vegetarianism and Modern Medical Science, and admission will be free.

CONGRESS OF THALASSOTHERAPY.—As already announced, the fifth International Congress of Thalassotherapy will be held at Bucharest and Constanza from May 21st to 29th. The Roumanian authorities have placed at the disposal of the Privy Council a limited number of invitations to, and programmes of, the Congress, and these will be sent to any duly accredited delegate on application to the Council.

MELBOURNE HOSPITALS.—To avoid overcrowding of the Melbourne hospitals the Government of Victoria is about to provide 460 additional beds and to establish a clinical hospital in connexion with the Melbourne University. The latest statistics show that the present accommodation of the Melbourne hospitals is between 1300 and 1400. The cost of the additions will be £460,000, to which the public will be asked to contribute. The Children's Hospital at Melbourne is also extending, an orthopædic section being in course of erection at Frankston, 26 miles from the town. This hospital will have accommodation for 100 patients, and is to include 12 beds for isolation and observation cases.

IRISH MEDICAL SCHOOLS AND GRADUATES ASSOCIATION.—The jubilee banquet of this Association was held on St. Patrick's Day, Saturday, March 17th, at the Savoy Hotel, London, Mr. G. W. Dawson, F.R.C.S.I., presiding, when the principal guest was General Sir Hubert de la Poer Gough. After the loyal toasts, the President carried out the interesting ceremony of presenting the Arnott memorial medal to Lieut.-Colonel W. P. MacArthur. Mr. Dawson, in introducing Colonel MacArthur to the audience, said that the Arnott medal was given in recognition of signal service to the world by a medical man, and he knew that he need not dwell upon the claims to the award of the professor of tropical medicine in the Royal Army Medical College. Colonel MacArthur was well known alike as a scientific worker, where his studies in parasitology had been especially valuable, and as a medical historian. Colonel MacArthur, who stated, amidst cheers, protests and laughter, that he came from the "black north," firmly supported his country as a national entity, though he admitted that when he had attempted to talk Irish in Ireland no one understood him—he was considered to be speaking Chinese. A second presentation followed of an illuminated address to Dr. William Douglas, who was an original councillor of the Association, having served on that body for 50 years. Colonel G. Moore, M.D., past chairman of the council, introduced Dr. Douglas as a veteran friend, and Dr. Douglas, in thanking the Association for the honour done to him, owned also to being from the "black north," while he sketched in a few words the development of Belfast from the days when he first remembered it until now. The toast of "The Guests" was proposed by Wing-Commander William Tyrrell, who wished that the company had chosen a better vehicle than himself for informing the company of the merits of Sir Hubert Gough, their principal guest, and of Mrs. Claude Beddington, whom he also associated with the toast as a well-known Irish woman, a patron of the art of music. The Gough family, said Wing-Commander Tyrrell, was a famous one in Ireland, and the value of their military services to the Empire had been marked by two V.C.'s and much campaigning. Their guest, himself the son of one of those V.C.'s, possessed numerous military distinctions and decorations, earned in India, South Africa, and the late war, when he commanded the Fifth Army. Sir Hubert Gough, in a brief reply, said that he was obeying an indication from the Chairman that politics were to be eschewed, while, for his own part, he regarded Ireland as one country and the British Empire as the brightest jewel in the Irish Crown. Mrs. Beddington's reply took the form of a series of Irish stories admirably told. The closing toast of "Prosperity to the Association," coupled with the name of the President, was proposed by Dr. Bertram Watson. The speaking was interspersed with songs by Miss Mary Sheridan, Mr. Patrick Hughes, and Wing-Commander Tyrrell.

NATIONAL UNIVERSITY OF IRELAND: *University College, Cork.*—Dr. E. V. Cantillon has been appointed lecturer in materia medica, and Dr. T. Donovan lecturer in therapeutics. It is understood that the Chair of Materia Medica and Therapeutics will not be filled.

UNIVERSITY COLLEGE HOSPITAL.—The Duke of Bedford, who is retiring from the office of president, which he has held for 30 years, appeals for £30,000 to clear off the accumulated debt before he is succeeded by Prince George, the new president. During the Duke's term of office the hospital has increased from 200 to 525 beds.

HOSPITAL EDUCATIONAL LECTURES.—King Edward's Fund reports that over 50 institutions have taken advantage of the educational lectures for schools and colleges upon hospital work. The scheme has been an undoubted success, and the London County Council has given permission for children from the central schools to attend the lectures, and will add to its general catalogue of slides duplicates of those used in the lectures.

MENTAL AFTER-CARE ASSOCIATION.—The annual meeting of this association will be held on Thursday, March 29th, at 3 P.M., at the Clothworkers' Hall, Mincing-lane, London, E.C. Sir Charles Wakefield, the President, will take the chair, and the speakers will include Lord Sandhurst, the Lord Chancellor's Visitor in Lunacy, Sir Frederick Willis, chairman of the Board of Control, and Mrs. Dunn Gardner, chairman of the L.C.C. Mental Hospitals Committee.

DIPLOMA IN PUBLIC HEALTH.—A three months' course of lectures and demonstrations on clinical practice and in hospital administration has been arranged by the Metropolitan Asylums Board. It will be given by Dr. F. H. Thomson at the North-Eastern Hospital, St. Ann's-road, Tottenham, N. 15, on Mondays and Wednesdays at 4.45 P.M., and alternate Saturdays at 11 A.M., beginning on Wednesday, April 11th. Particulars may be had from the Clerk to the Board, Victoria Embankment, London, E.C. 4.

KING GEORGE'S HOSPITAL.—Owing to an extension of the radius of the operations of King Edward's Hospital Fund for London, the London County Council have found it possible to devise a scheme for a hospital to serve the Thames-side area, which contains the Becontree Estate. With the support of the Fund, and the concurrence of the Ministry of Health, a new voluntary general hospital, containing from 300 to 400 beds, will be erected at Becontree. A letter has been received from the Home Secretary stating that the King has approved of the new hospital being known as "King George's Hospital."

TUNBRIDGE WELLS HOSPITALS.—This is the centenary year of the Tunbridge Wells and Counties General Hospital at Tunbridge Wells, and it is to be marked by the commencement of the erection of a hospital of 150 beds and to include a special wing to amalgamate the local Eye and Ear Hospital. The cost approximately will be £80,000, but of this figure a large sum will accrue from the sale of the General Hospital.

HOSPITAL SAVING ASSOCIATION.—This association has published figures showing the increased importance of direct contributions from patients to the funds of voluntary hospitals on the lines recommended by Lord Cave's Committee. For July, 1924, the membership of the association was 62,390, and in July, 1927, the number had increased to 351,865. The total membership is now over 400,000. In July, 1924, the sum distributed to hospitals was £14,032, while for 1927 it reached £153,670. These sums were paid to hospitals as special contributions in respect of the cost of the treatment of members of the association or of their dependants.

MEDICAL WOMEN'S INTERNATIONAL ASSOCIATION.—A meeting of this Association will be held at Bologna on Wednesday, April 11th, and will be followed on April 12th, 13th, and 14th by an open meeting, to which all women doctors are invited. The subjects for discussion will be (1) medical measures for the protection of children and young persons in the various countries, (2) diseases of the eye in relation to general medicine. A large attendance is expected from the 22 countries which are at present affiliated to the association, as well as from other countries which are hoping to form organisations. The Italian railway authorities have granted special facilities, and various entertainments have been arranged, including a reception by the municipality and a dinner at the local Fascist headquarters. The Italian Association of Women Doctors is holding its annual meeting during the same week, and wishes to convey to the medical women of all countries a message of welcome to Bologna. Further particulars may be had from the hon. secretary of the association, Miss Martindale, M.D., 28, Weymouth-street, London, W. 1.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MONDAY, March 26th.—8 P.M., ODONTOLOGY, ELECTRO-THERAPEUTICS. Special discussion on the Pulpless Tooth. Speakers for the Section of Odontology, Mr. Frank Coleman (opener), Mr. Owen C. Morphy, Mr. A. T. Pitts, Dr. A. Livingston, Mr. St. J. Steadman, Mr. B. Mendleson, and Mr. A. F. MacCallan; for the Section of Electro-Therapeutics, Dr. H. M. Worth (opener), Dr. G. Murray Levick, Dr. Meyrick Jones, Dr. J. F. Brailsford, Mr. Norman Grellier, Dr. A. C. Jordan, and Dr. B. G. Batten.

TUESDAY.—5 P.M., MEDICINE. Papers: Dr. F. Parkes Weber: A Note of Idiosyncrasies and Abnormalities in Human Beings. Prof. D. W. Carmalt-Jones: New Zealand View on Goitre.

WEDNESDAY.—5 P.M., COMPARATIVE MEDICINE. Short Papers: T. Dalling, J. H. Mason, and W. S. Gordon: (1) Intradermic Tuberculin Testing in Cattle; (2) Transference of Maternal Immunity in Sheep. J. W. Trevan: The Present State of Knowledge of Sex Hormones. H. J. Parish: B.C.G. Experiments in Guinea-pigs. C. C. Okell: Diphtheria Infections and Diphtheria Immunity in Horses.

THURSDAY.—8.15 P.M., PSYCHIATRY. Members of the Medical Section of the British Psychological Society have been invited to attend this meeting. Discussion on the Ætiology of Alcoholism. Openers: Dr. Bernard Hart and Dr. Edward Mapother (for the Section of Psychiatry); Dr. Edward Glover and Dr. Crichton Miller (for the British Psychological Society).

MEDICAL SOCIETY OF LONDON, 11 Chandos-street, Cavendish-square, W.

MONDAY, March 26th.—8.30 P.M. Advances in the Treatment of Cancer of the Cervix Uteri. Discussion to be introduced by Dr. Herbert Spencer and Dr. Max Cheval, of Brussels.

MEDICAL SOCIETY FOR THE STUDY OF VENEREAL DISEASES, 11, Chandos-street, Cavendish-square, W.

FRIDAY, March 30th.—8.30 P.M., Mr. Eardley Holland and Dr. F. H. Lacey: The Antenatal Treatment of Venereal Disease—Gonorrhœa (second meeting). A discussion will follow.

ST. JOHN'S HOSPITAL DERMATOLOGICAL SOCIETY.

WEDNESDAY, March 28th.—4.15 P.M. (at St. John's Hospital, 49, Leicester-square), Clinical cases. Dr. R. Craik: Monilia.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS, Pall Mall East, S.W.

TUESDAY, March 27th.—5 P.M., Dr. J. S. Collier: Epilepsy. (Lumleian Lecture (2).)

THURSDAY.—5 P.M. (Lumleian Lecture (3)).

ROYAL INSTITUTION, Albemarle-street, W.

THURSDAY, March 29th.—5.15 P.M., Group-Captain Martin Flack: Physiological Aspects of Flying (2).

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith.

MONDAY, March 26th.—10 A.M., Dr. Dowling: Skin Department. 2 P.M., Dr. Trevor Davies: Gynæcological Department. 2 P.M., Dr. Ironside: Medical Out-patients.

TUESDAY.—10 A.M., Medical Registrar: Medical Wards. 2 P.M., Mr. Sinclair: Surgical Out-patients. 2 P.M. Mr. Hamblen Thomas: Throat, Nose, and Ear Department. 2 P.M., Mr. Addison: Operations.

WEDNESDAY.—10 A.M., Dr. Burnford: Medical Wards. 2 P.M., Mr. Tyrrell Gray: Operations. 2.30 P.M. Mr. Donald Armour: Surgical Wards.

THURSDAY.—10 A.M., Dr. Grainger Stewart: Neurological Department. 2 P.M., Mr. Simmonds: Surgical Out-patients. 3 P.M., Sir Henry Simson: Gynæcological Ward.

FRIDAY.—10 A.M., Dr. Pritchard: Medical Wards. 12 noon Dr. Ironside: Clinical Demonstration. 2 P.M., Mr. Vlasto: Throat, Nose, and Ear Department.

SATURDAY.—9.30 A.M., Dr. Burnford: Bacterial Therapy Department. 10 A.M., Dr. Owen: Medical Diseases of Children.

Daily, 10 A.M. to 5 P.M., Saturdays, 10 A.M. to 1 P.M. In-patients, Out-patients, Operations, Special Departments, Anæsthetic and Operative Surgery Classes.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.

THURSDAY, March 29th.—4 P.M., Mr. A. T. Pitts: On Hygiene.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham.

MONDAY, March 26th.—2.30 to 5 P.M., Medical, Surgical, and Gynæcological Clinics. Operations.

TUESDAY.—2.30 to 5 P.M., Medical, Surgical, Throat, Nose and Ear Clinics. Operations.

WEDNESDAY.—2.30 to 5 P.M., Medical, Skin, and Eye Clinics. Operations.

THURSDAY.—11.30 A.M., Dental Clinics. 2.30 to 5 P.M., Medical, Surgical, and Ear, Nose and Throat Clinics. Operations.

FRIDAY.—10.30 A.M., Throat, Nose, and Ear Clinics. 2.30 to 5 P.M., Surgical, Medical, and Children's Diseases Clinics. Operations.

On Tuesday, at 2.15 P.M., and Thursday, at 2.30 P.M., there will be special demontrations of Medical and Surgical Cases by Dr. F. G. Crookshank and Mr. H. W. Carson respectively.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, March 26th, to SATURDAY, March 31st.—HAMPSTEAD GENERAL HOSPITAL, Haverstock Hill, N.W. Practitioners' course in medicine, surgery, and the specialties. Mon. to Fri., 4.30 to 6 P.M., lecture and demonstration.—ROYAL NATIONAL ORTHOPÆDIC HOSPITAL, Great Portland-street, W. All day course—clinics, operations, and lectures.—Further particulars from the Secretary, Mayfair 2236.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.

TUESDAY, March 27th.—5 P.M., Dr. A. C. Roxburgh: Scleroderma. Neurofibromatosis.

THURSDAY.—5 P.M., Dr. A. C. Roxburgh: Diseases of the Nails.

CENTRAL LONDON THROAT, NOSE AND EAR HOSPITAL, Gray's Inn-road, W.C.

FRIDAY, March 30th.—4 P.M., Mr. Archer Ryland: The Musculature of the Vocal Cords.

PEOPLE'S LEAGUE OF HEALTH.

FRIDAY, March 30th.—6 P.M. (at the Medical Society's Rooms, 11, Chandos-street, Cavendish-square, W.), Mr. Eric Holmes: Common Errors in Daily Life.

CHADWICK PUBLIC LECTURES.

FRIDAY, March 30th.—8.15 P.M. (at the Royal Institute of British Architects, 9, Conduit-street, W.), Dr. R. E. Stradling, Assoc.M.Inst.: Balbus Built a Wall. (Blossom Gift Lecture.)

MANCHESTER POST-GRADUATE LECTURES, Mill-street, Manchester.

THURSDAY, March 29th.—4.15 P.M., Mr. P. G. McEvedy: Treatment of Thyroid Adenomata.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE COURSE.

TUESDAY, March 27th.—4.15 P.M., Mr. P. R. Wrigley: Intestinal Obstruction.

FRIDAY.—4.15 P.M., Mr. H. H. Rayner: Demonstration of Surgical Cases.

Appointments.

Queen Charlotte's Maternity Hospital: Ross, G. A., M.B., Ch.B. Aberd., Senior Resident Medical Officer; LOWRY, H. C., M.B., Ch.B., F.R.C.S., Assistant Resident Medical Officer; MORGAN, Miss G. M. B., M.B., B.Ch., District Resident Medical Officer.

Certifying Surgeons under the Factory and Workshops Acts: HUGHES, L. E., L.R.C.P. Lond., M.R.C.S. (Cirencester); JONES, T. E., L.R.C.P. Lond., M.R.C.S. (Aberayron, Cardiganshire); and MCINTOSH, J. W., M.B., Ch.B. Edin. (King's Lynn, Norfolk).

Vacancies.

For further information refer to the advertisement columns.

Ashton-under-Lyne, District Infirmary.—H.S. At rate of £150.
Barbados Lunatic Asylum.—Asst. Med. Supt. £500.
Belgrave Hospital for Children, Clapham-road, S.W.—H.S. and Asst. H.P. Each at rate of £100.
Brighton, New Sussex Hospital.—H.S. At rate of £50.
Bristol, Southmead Hospital.—Consultant to Ear, Nose and Throat Dept. £100.
Burnley, Victoria Hospital—H.P. At rate of £125.
Bury Infirmary.—Third H.S. At rate of £150.
Cambridge, Addenbrooke's Hospital.—H.S. At rate of £130.
Cardiff Royal Infirmary.—Gynæcological H.S. At rate of £50, and Ophth. H.S. At rate of £75.
Charing Cross Hospital.—Surg. Reg. £150. Also Asst. Surg.
Croydon Union, Mayday-road Hospital.—Res. Asst. M.O. £300.
Dudley, Guest Hospital and Eye Infirmary.—Asst. H.S. £150.
Dublin, City Skin and Cancer Hospital.—Res. H.S., &c.
Evelina Hospital for Children, Southwark, S.E.—H.S. At rate of £120. Also Med. Radiographer. £120.
Folkestone, Royal Victoria Hospital.—Sen. and Jun. Res. M.O.'s. At rate of £150 and £100 respectively.
Galway University College.—Professorship of Therapeutics, &c. Also Midwifery. Each £308–£320.
Hong-Kong.—Two Asst. M.O.H.'s. Each £740.
Hospital for Sick Children, Great Ormond-street, W.C.—H.S., H.P., and Asst. Cas. O. Each £50.
Indian Medical Service.—Commissions.
Lanark County.—Asst. M.O. £500.
Liverpool Heart Hospital.—Hon. Asst. Phys.
Liverpool, Waterloo and District General Hospital.—Res. H.S. £50.
London Temperance Hospital, Hampstead-road, N.W.—Surg. Reg. 40 guineas.
Lucknow University.—Professor of Anatomy. Rs.1450 per mensem.
Melbourne, Victoria, Australia, Children's Hospital, Frankston.—Med. Supt. for Orthopædic Section £1000.
Miller General Hospital for South-East London, Greenwich-road, S.E.—Hon. P. to Children's Spec. Dept.
Ministry of Health, Whitehall, S.W.—Deputy Regional M.O. £800.
Nottingham General Dispensary.—Res. Lady Surg. £250.
Paddington Green Children's Hospital, London, W.—H.P. and H.S. Each at rate of £150.
Prince of Wales's General Hospital, Tottenham, N.—H.S.'s and H.P., also Jun. H.S. and Jun. H.P. At rate of £120 and £90 respectively.
Princess Louise Kensington Hospital for Children, West Kensington, W.—H.P. and H.S. At rate of £100 and £75. respectively.
Queen's Hospital for Children, Hackney-road, E.—P. in charge of Skin Dept.
Rochdale Infirmary and Dispensary.—Jun. H.S. £200.
Royal Free Hospital, Gray's Inn-road, W.C.—Cas. O. £150. Also Res. Anæsthetist.
Wakefield, City of.—Deputy M.O.H. £625.

The Chief Inspector of Factories announces vacancies for Certifying Factory Surgeons at Westerham (Kent), Aberchirder (Banffshire), Rhynie (Aberdeenshire), Tyldesley (Lancashire) and Fakenham (Norfolk).

The Home Secretary gives notice that he proposes to appoint a medical referee or referees under the Workmen's Compensation Act for the districts of the Northampton and Towcester, Newport Pagnell, and Leighton Buzzard County Courts (Circuit No. 23). Applications are invited from duly qualified medical practitioners resident at or near these centres, and should be addressed to the Private Secretary, Home Office, Whitehall, S.W. 1, on or before April 7th, 1928.

In consequence of the resignation, as from the 30th prox., of Dr. A. S. Percival, Newcastle-on-Tyne, Ophthalmic Specialist Medical Referee under the above Act for all County Courts in Circuits 1 and 2 (Northumberland and Durham), the appointment held by him will become vacant. Applications for the post should be addressed to the Private Secretary, Home Office, Whitehall, S.W. 1, and should reach him not later than April 11th, 1928.

Births, Marriages, and Deaths.

BIRTHS.

BICKERTON.—On March 17th, at Welbeck-street, the wife of J. Myles Bickerton, F.R.C.S. Eng., of a daughter.

HITCHCOCK.—On March 15th, at Harrogate, the wife of Dr. C. G. Hitchcock, of a son.

PARSONS.—On March 14th, at Wellington-road, St. John's Wood, the wife of Dr. R. A. Parsons, of a son.

MARRIAGES.

LAING—JOHNSTON.—On March 17th, at St. Anne's Church, Corstorphine, David Laing, M.B., Ch.B., to Hilda Katharine, youngest daughter of the late James Johnston and Mrs. Johnston, Corstorphine, Mid Lothian.

SIMPSON—CARTER.—On March 17th, at St. Mary's Church, Melton Mowbray, John Whitwell Hope Simpson, M.R.C.P. Lond., to Florence Mable, younger daughter of Mrs. Carter, of Melton Mowbray.

DEATHS.

FERRIER.—On March 19th, at York House, Church-street, Kensington, W., Sir David Ferrier, M.D., LL.D., F.R.S., in his 86th year.

KILNER.—On March 15th, at Northgate-street, Bury St. Edmunds, Henry Goff Kilner, Croix de Guerre, M.B., B.S., M.R.C.S., L.R.C.P.

KINKHEAD.—On March 18th, at Forster House, Galway, Prof. Richard John Kinkhead, M.D., in his 83rd year.

MAYNARD SMITH.—On March 18th, at Wimpole-street, W., Sidney Maynard Smith, Colonel, A.M.S., C.B., Croix de Guerre, Kt. of Grace of the Order of St. John of Jerusalem, M.B., B.S., F.R.C.S., aged 52.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

INTERNATIONAL MEDICAL GROUP FOR THE INVESTIGATION OF BIRTH CONTROL.

LAST September, in the course of a Conference on World Population, held at Geneva, medical representatives of different countries interested in the subject of birth control met informally and decided to form an international medical committee with the objects of coördinating biochemical, physiological, and statistical research bearing upon contraception, and of broadcasting the knowledge so obtained. By this means it is hoped to establish an informed and enlightened attitude to birth control through the medical professions of the different countries. The activities of the committee are to be limited to statistical investigations on the reliability, simplicity, and harmlessness of different contraceptives; immunological, biochemical, or physiological research work on the problems of contraception and sterility, and information on the general attitude of a country towards birth control. The headquarters are to be in England and the committee is to be essentially a medical information bureau and non-propagandist.

Invitations were sent out at the beginning of December for contributions to the first report and three replies were received, which constitute the first quarterly review. Dr. Leunbach (Denmark) reports that he has gradually given up the use of the cervical pessary, which is only suitable for 5–10 per cent. of women. It requires a stud-shaped cervix and a rather tight vagina, and very few women can apply it correctly themselves. He now uses only the Dutch pessary with watch-spring rim, such as is sold in this country as the "Lambert" or "Norman Haire" pessary. It took his manufacturer half a year to find just the right kind of spring, which must be neither too tight nor too slack. The spring used is an unheated Swiss watch spring and the cost about 3*s*. A good pessary should last a year or more. In order that a pessary should be easy to insert and held firmly in position in the vagina it must be large in size, and Dr. Leunbach has now made it his rule to use the largest that can without inconvenience be placed in the vagina, usually between 75 and 82 mm. in diameter. He quotes a case where a No. 75 managed to lie with its anterior rim in the recess below the symphysis and its hinder rim still in front of the cervix, so that conception occurred. Most of the failures he has seen have occurred because the pessary was many sizes too small. In the year 1926–7 he fitted 800 pessaries and only had three failures. He has seen no case where the pessary has done any harm or has reduced sexual enjoyment. He has come to the conclusion, after careful experiment, that all contraceptive suppositories are practically worthless. For the douche water he recommends chinosol, or tablets made of trypaflavine and boric acid of each 0·02 g., but any harmless substance will serve.

The official attitude to birth control in Denmark is a passive hostility, but there is no legal opposition, and public and medical opinion is gradually coming round to the practice. In Sweden, Dr. Alma Sundquist reports, the general attitude of the doctors is enlightened and tolerant, and the law against public information about contraceptives is hardly ever enforced. In Germany, according to Dr. H. Riese, the teaching of birth control is regarded as contrary to medical honour, and not even the gynæcologist is taught contraceptive methods. At his clinic he recommends a gelatin suppository containing quinine, boric acid, and lactic acid, placed against the cervix immediately before the introduction of the rubber cap. On the morning after use, the woman is instructed to irrigate with potassium permanganate or lactic acid. He has had no failures in the several hundred cases he has seen in the last two years.

The review concludes with an account of the position in England by Dr. C. P. Blacker, taken from the annual reports of the Ministry of Health 1926–7, and of the Walworth Women's Welfare Centre, 1926–7, the works of Dr. Marie Stopes, and two books published by the National Council of Public Morals—viz., "The Ethics of Birth Control" (Macmillan) and "The Medical Aspects of Contraception" (Martin Hopkinson).

A SATISFACTORY MICROSCOPE.

WE are informed that the London School of Hygiene and Tropical Medicine has placed an order with Messrs. R. and J. Beck, Ltd., for over two hundred microscopes for use in the laboratories now under construction in Gower-street. The order has been given on the recommendation of a small committee, which has been considering the matter for some time in consultation with the Department of Applied Optics, National Institute for Medical Research. The type of microscope selected embodies features that have been evolved to meet the needs of the heads of departments at the school. Its base is of rigid construction with points of support sufficiently wide spread to ensure stability in any position. The foot is of the type now being produced by Messrs. Beck combining the advantages of the horse-shoe or Continental model with the so-called English foot. The stage is of the completely built-in mechanical type with travel of 1½ in. + 1 in., the entire top plate of the stage forming the moving part. On the stage a slide-holder of new design is provided, in which the slide is firmly held without springs. The fine adjustment is of the double-lever pattern, operated by milled heads on either side. The body is 2 in. in diameter and is provided with an adjustable graduated drawtube. The substage is actuated by rack and pinion, and all substage appliances are carried on Akehurst slides. Thus, the interchange of illuminating systems is both easy and accurate. The optical equipment is ample for all bacteriological requirements, and the objectives are to be coloured externally so as to enable them to be recognised at sight. Messrs. Beck have agreed that certain rigid tests shall be applied to the whole equipment before delivery is accepted.

THE "HELSAN" TUBERCULOSIS DEMONSTRATION IN SWEDEN.

As long ago as 1904 an elaborate scheme was devised by the Swedish National Association against Tuberculosis for solving the tuberculosis problem on a small scale in an isolated country area. The working of this scheme is the subject of a long paper in English, in *Acta Tuberculosea Scandinavica*,[1] by Dr. G. Neander, Secretary General of this Association. The area chosen was in the north of Sweden, and early in 1906 a whole-time specialist in tuberculosis was appointed together with two nurses. A building was purchased to serve as a combined cottage hospital, children's home, and doctor's residence. A wholesale examination of the population in 1906 was repeated in 1908, with the result that 12 per cent. of the total population examined in 1908 were found to be suffering from pulmonary tuberculosis. By the addition of 33 cases of surgical tuberculosis, the total incidence of tuberculosis in the population examined was brought up to 14 per cent. The campaign for reducing this tuberculosis-rate was conducted on lines familiar to every tuberculosis worker. When children could not be removed to the cottage hospital from tuberculous homes, every effort was made to reduce the exposure to infection in these homes to a minimum. All the 22 healthy children removed from tuberculous homes to the "Helsan" Home were found, in 1914, to be in excellent condition. An educational campaign was directed to abolishing, among other things, the old-fashioned cupboard beds in which two or more persons used to sleep almost hermetically sealed up. When, in 1926, another wholesale examination was made, it was found that the incidence of pulmonary tuberculosis had fallen from 12 to 8 per cent. and the total incidence of all forms of tuberculosis from 14 to 9·5 per cent. As for the tuberculosis mortality, it was found that this had declined from 8·3 per thousand in the five-year period 1911–1915, to 6 per thousand in the five-year period 1921–1925—i.e. a fall of 28 per cent. This fall was the more striking, as the fall in the tuberculosis death-rate in the district of which the experimental area is a part was only 0·5 per cent. Indeed, while the tuberculosis death-rate had fallen dramatically in the experimental area, it had actually increased in the adjoining areas.

M.D.—The first passage will be found in Pantagruel, Bk. II., c. vii. The exact quotation from Rabelais is: Quæstio subtilissima: utrum Chimæra, in vacuo bombinans possit comedere secundas intentiones? It purports to be an entry in the catalogue of books in the library of St. Victor in Paris. The second reference, also ribald when completed, is to a passage in the Summa Theologiæ: An plures angeli possint esse simul in eodem loco? Non, quia non possunt esse duæ causæ completæ unius effectus. Both authors would be likely to be quoted in a mediæval medical work.

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[1] The "Helsan" Institute in Norrbotten. By Gustaf Neander. Copenhagen: Levin and Munksgaard. 1928. Pp. 128.

BOARD OF EDUCATION: MEDICAL BRANCH.—The Medical Branch of the Board will be transferred from 54, Victoria-street, London, S.W. 1, to the Board's main office in Whitehall, on April 2nd, and correspondence from that date should be addressed to the Secretary, Board of Education (Medical Branch), Whitehall, London, S.W. 1. The telegraphic address will be "Meducation, Parl. London," and the telephone number, Victoria 9800.

Goulstonian Lectures

ON

SOME PROBLEMS OF NEPHRITIS.

The Second Goulstonian Lecture in 1928 delivered before the Royal College of Physicians of London on March 15th

BY T. IZOD BENNETT, M.D. LOND.,
FELLOW OF THE COLLEGE; PHYSICIAN TO OUT-PATIENTS, MIDDLESEX HOSPITAL, AND TO THE ROYAL NATIONAL ORTHOPÆDIC HOSPITAL.

LECTURE II.*—THE PROBLEM OF ŒDEMA.

"When albumen is proved to exist in the urine I look upon it with anxiety, and the confirmed derangement I always view with dread."—R. BRIGHT, Goulstonian Lectures, 1833.

I CONCLUDED my previous lecture with a quotation from Bright, in which he expressed the opinion that an increase in the urea of the blood was at least a partial explanation of the phenomena which we group together as uræmia. When we consider the difficulties of blood analysis, this observation becomes a very wonderful one, but we recognise to-day that it is at least improbable that the accumulation of nitrogenous substances in the blood is an actual cause of uræmia, however useful an index these substances may be of the imminence of such a catastrophe.

In this lecture I am going to discuss the problems of the so-called "renal" œdema, a subject of even greater complexity than that of uræmia. The work of the chemical and experimental laboratories has advanced to a degree that makes it quite impossible for any man to form a useful judgment on such subjects from the result of his personal observation alone, and the intricacy of many of the researches into œdema is such that the wheels of the intelligence become almost clogged in the effort of sifting the important from the insignificant facts; but I believe that close study leads one to the conclusion that when œdema occurs in a case of nephritis it is evidence of the existence of an extra-renal factor which may explain the nephritis, but is never the consequence of nephritis. We speak of "renal" œdema, and we are accustomed to look on nephritis as one of the common causes of œdema, but I am sure that we should be very hesitant in adopting such a view. The time has certainly not yet come when any man can claim to understand with full clarity the mechanism of œdema, but I believe that if the existing data are carefully and logically examined the balance of evidence to-day is against œdema ever being the direct consequence of disease of the kidney, though it is possible that the cause of the œdema may also provoke disease of the kidney.

THE VIEWS OF BRIGHT.

It is, I think, accurate to say that Bright's most famous work directed the attention of the world to the association between albuminuria, œdema, and disease of the kidneys, and it is perhaps an excessive piety which has made many of his successors cling to the notion that such œdema is a necessary consequence of nephritis. I say an excessive piety because examination of Bright's actual words reveals the same dislike for dogmatism regarding this problem that we find in his expressed opinion on so many subjects. In his Goulstonian lectures he said:—

"My conviction is complete as to the existence of some undivided connection between the three facts—anasarca, scanty urine, and diseased function going on to diseased structure of the kidney. How these facts are connected or what necessary dependence the one may have upon the other, it is indeed difficult to point out, and some might suppose that we are rather perverting the order of events when we speak of the condition of the kidneys as causing anasarca";

but it is clear from the succeeding lines that his own opinion was in favour of the theory that œdema in nephritis is due to the disease of the kidneys.

If we follow the life-work of another great pioneer of internal medicine, Claude Bernard, we cannot, I think, fail to be impressed by the fact that his conviction that the mystery of diabetes mellitus was to be solved by a fuller understanding of hepatic disturbance not only wasted months of his own time, but led to many of his countrymen subsequently wasting years through too pious a belief in the infallibility of the master. The more carefully we read the works of Bright, the more must we be impressed by his caution in avoiding dogmatism; nor must we fail to note that occasionally, when dogmatic, he was wrong. Prof. W. S. Thayer, of Baltimore, in an inspiring oration delivered last year at Guy's Hospital, recalled to his audience the fact, for example, that Bright stated that chorea was often the result of pericarditis. But on the question of the œdema seen in nephritis Bright was more cautious, and though he formulated his personal opinion he did so with reserve.

THE MAIN SYNDROMES OF NEPHRITIS.

It is now common knowledge that when cases of nephritis are examined from the clinical point of view there are many which stand out clearly owing to the presence of certain main features and a corresponding absence of other signs and symptoms. In my previous lecture I selected a case of cystic disease as illustrating in this manner uræmia without œdema. It is not more difficult to find cases where œdema and albuminuria are similarly conspicuous and uræmia and nitrogen retention absent. In Table I. I have set

TABLE I.

Marked.	Albuminuria.	Slight.
,,	Œdema.	Absent.
Absent.	Cardiac hypertrophy and hypertension.	Marked.
,,	Nitrogen retention.	,,
,,	Tendency to uræmia.	,,
Normal.	Urea in urine.	Low concentration.
Normal or diminished.	Amount of urine.	Polyuria or suppression.
Normal.	Specific gravity of urine.	Low.

out the main features of cases of renal disease, placing in the columns on either side the characteristics of the two extreme types which diverge from the main general picture. These contrasting types constitute the hydropiginous and azotæmic nephritis of French writers and are often referred to in British and American writings under similar titles. It is, as I have said, quite easy to secure examples of either class, but to explain how disease of the kidney can produce results so entirely divergent is excessively difficult.

An explanation was at last offered by the theory of Widal, who, working with Javal in the early days of the present century, put forward the hypothesis that nephritis might affect the kidney in such a manner as to interfere either: (*a*) with its power of excreting urea and kindred nitrogenous substances, or (*b*) with its power of eliminating salts of which sodium chloride is the most important. Cases of albuminuria with œdema, of the type to which long custom in this country has given the name of "chronic parenchymatous nephritis," were thus explained as being examples of a derangement of the capacity of the kidney to excrete sodium chloride without interference with the excretion of urea and other nitrogenous bodies.

THE THEORY OF SALT RETENTION.

This view, which I gather from a very recent article by Lemierre to be still current, is founded chiefly on the fact that the administration of salt to patients with so-called renal œdema is followed by an increase in the œdema and a failure of the salt to appear in the urine. And the successful reduction of œdema by means of salt-free diets in some cases is held to be strong confirmation of the theory. But if the salt retention is due to failure on the part

* Lecture I. appeared on March 17th.

of the kidney, we should find an increase in the blood-chlorides, and this has never been demonstrated in these cases. Moreover, it is now generally agreed that diminished excretion of sodium chloride is even more marked in the case of diseases such as cardiac failure and lobar pneumonia, where the renal function is not interfered with. When one proceeds from this to point out that the same kidneys which at first secreted a urine poor in chlorides will a week later, when œdema is subsiding, secrete a urine containing abundant chlorides, it becomes increasingly probable that the retention of salt is due to some extra-renal cause, or that, in the striking phrase of Fishberg, there has been a " pre-renal deviation " of both water and chloride, or, in other words, that these substances have been diverted into the tissues without the kidneys having had an opportunity of excreting them.

We know to-day that salt-free diets are of uncertain utility in œdema, but that on the whole they are more likely to be effective in cases of cardiac failure than in cases of so-called nephritic œdema. The salt-retaining kidney must, I fear, be dismissed as a myth as far as it may serve as an explanation of œdema, for, if there is any type of kidney which is capable of retaining salt, it is not that associated with œdema, but rather the kidney where extreme destruction has led first to nitrogen retention, and, last of all, to retention of bodies such as sodium chloride which are normally not greatly subjected to concentration in their passage from blood to urine. Table II. shows the degree of

TABLE II (*after Fishberg*).

Substance.	Concentration in—		No. of times concentrated.	In renal insufficiency.
	Urine.	Blood.		
Urea	2000	30	65	Increased.
Creatinine ..	75	2	35	,,
Phosphate ..	150	3	50	,,
Chloride ..	500	350	1·5	Not increased.
Calcium ..	15	10	1·5	,,

concentration undergone by certain of the commoner substances in the urine as opposed to their state in the blood. A short study of the figures in the third column gives the clue to the problem as to why some constituents, such as urea and phosphates, are so notably increased in the blood of all patients with renal impairment of high degree, for it is surely natural that the greatest difference will be found in those substances which are normally most concentrated by the healthy kidney. But with the final stages of renal impairment, even these bodies which are concentrated but slightly by the normal kidney become affected, and then, as de Wesselow and others have shown, an increase in the chlorides of the blood becomes apparent and may be demonstrated by means of salt test-meals.

The most marked examples of such retention are found in mechanical obstruction. Braasch has recorded a case of obstruction to both ureters where the blood chlorides reached the extreme figure of 1500 mg. per 100 c.cm., and Fishberg has observed a case where the figures rose to 1000 mg. In uræmia following nephritis the concentration of blood chlorides does not often approach such heights, but an increase above the normal is probably always present in the terminal stages. We must, on the other hand, note that in such cases with high concentration of chlorides in the blood œdema is often conspicuously absent. If now we summarise the facts concerning chloride retention in nephritis, we can, I think, draw three important conclusions :—

1. That in cases of " renal " œdema there may be evidence of accumulation of chlorides in the watery subcutaneous tissues, but there is no evidence of chloride retention in the blood.

2. That there are cases of renal disease in which retention of chlorides in the blood is present, but such cases do not as a rule exhibit œdema.

3. That it is, therefore, probable that the accumulation of chlorides in the œdema fluid is due to an extra-renal factor.

AN ILLUSTRATIVE CASE.

From these theoretical considerations it will no be well to turn to a particular case illustrative so-called renal œdema, a case selected on account the absence of nitrogen retention and cardiovascul features.

The patient, a man aged 22, has been under my ca during the last 18 months. His early history was of insigni cant childish ailments—measles, chicken-pox, and whoopin cough having affected him, but all slightly. Five years a he had a trivial attack of pleurisy, and three years ago w troubled with a transient skin eruption. In the summ before last, during a holiday at a time when his heal appeared to be excellent, he observed one day after bathi that his abdomen and legs were swollen. A few weeks lat he noticed this swelling in the face, and became troubl with a transient epigastric pain, accompanied after a fe days by diarrhœa. He noticed nothing the matter with h urine.

In the late autumn of 1926 he consulted me at the Middles Hospital, when he was suffering from an obvious œdem of the legs and lumbar region, together with some puffine of the face. Ascites was present, and there was evidence bilateral hydrothorax. The blood pressure was 140/9 the heart apparently normal. After two days in bed t blood pressure was found to be 100/70. The optic fun were quite normal, the urine had a specific gravity of 102 and contained large amounts of albumin, together with a fe hyaline and granular casts, but no blood. The Wasserma reaction was negative, and analysis of the blood gave norm figures as regards nitrogenous constituents and chlorides.

He was admitted to the Middlesex Hospital under t care of my senior colleague, Dr. C. E. Lakin, and was p on a diet containing abundant protein and no fat. T urine was found to vary in volume between one-third a three-quarters of a litre per diem. The daily albumin lo amounted to as much as 10 g. or more. Repeated blo analyses confirmed the normal nitrogen figures. The se mentation time of the red corpuscles was considera diminished, and the basal metabolic rate was 19 per ce below normal. The urea in the urine varied between 2 a 3 per cent., and, after the administration of 15 g. of ur rose to just about 3, showing full concentrating pow In addition to the generous protein diet, he was given ur in doses of 60 g. or more daily, and in a few weeks t œdema of the legs, face, and lumbar region complet disappeared, although there remained evidence of slig ascites. The daily albumin loss remained high, but t patient felt quite well in himself throughout the treatme He has been seen at regular intervals during the subsequ 12 months, and though his œdema has fluctuated and nev entirely disappeared it has never reached a degree sufficie to make him abandon his work. The albuminuria has alwa been excessive. He has, from time to time, been giv thyroid extract, and shows a marked tolerance for t substance, but I have been unable to observe any defin influence thereby exerted on his general state.

NEPHROSIS.

Cases of this type are, one gathers, typical of th group which it is now fashionable to describe unc the title of " nephrosis," a word apparently fi suggested by Müller and since adopted very wide especially in the United States by Epstein and othe and in Germany by Volhard and Fahr, Munk, a their followers. The word is ambiguous, in itself conveys no clear concept, and a study of the literatu reveals that it is used with a different connotati by different writers. In a paper published in co junction with E. C. Dodds and D. T. Davies last ye an endeavour was made to define the prevalent vie on the subject. We wrote :—

" According to the conception of Munk, all renal disea with œdema, apart from heart failure, should be classed nephrosis, whilst cases with hæmaturia, uræmia, and card vascular complications constitute true nephritis. Wher waterlogged patient gets an attack of hæmaturia, and blood pressure rises and nitrogen retention appears, it nephritis complicating nephrosis ; when, on the other ha a patient after a febrile hæmaturia with transient hyperpie passes into a condition of anasarca, that is nephrosis sup vening upon nephritis. It must be noted that in contr to these views many British pathologists hold that ætiology of all kidney disease is toxic, degeneration be always the first effect and reaction a later, but not inevitab consequence, and that degeneration is itself an inflammato phenomenon, whether followed by reaction or not."

I am interested to note that a recent essay by su an authority as Prof. Ludwig Aschoff confirms wh

have quoted as being a correct interpretation of the German view. He writes :—

"The meaning of this word has given rise to many differences of opinion in the past decades. . . . We understand it to mean those diseases of the kidneys which are characterised chiefly by degenerative changes of the tubular apparatus," and later, "the characteristics of Volhard's nephrosis, in the strict sense, are marked œdema and the excretion of much albumin in the urine, absence of the least increase of blood pressure, and, therefore, also of the slightest hypertrophy of the heart."

The case I have presented may, therefore, be accepted as a typical example of nephrosis, and it is further typical of this group in that the patient exhibits the lipæmia which is, I believe, characteristic of all cases of pure nephrosis, and present in the vast majority of examples of "renal" œdema of all classes.

Biochemical Aspects of Nephrosis.

The biochemical investigation of cases such as the one I have dealt with yields results which are largely negative: (*a*) The total daily volume of the urine is somewhat reduced when observed over any long period, but its urea-content is high during periods when one would expect it to be high. The specific gravity is consequently normal in its variations. Blood is absent, and the only casts are hyaline or granular. The notably abnormal constituents are albumin and certain lipoid substances which can be recognised by their double refractive properties when the centrifuged urine is examined by a microscope fitted with a polariscope. (*b*) The blood is normal as regards the nitrogenous substances and salts in solution, but is abnormal in that it almost invariably contains an excessive amount of cholesterol. Examination of the blood proteins shows that the normal proportion of albumin to globulin is reversed. (*c*) The basal metabolic rate is usually considerably lower than the normal.

Of these various findings the most striking is excessive cholesterol in the blood, which is incidentally almost certainly the explanation of the doubly refractive lipoids found in the urine. In Table III. are given the results of the estimation of cholesterol in the blood of the patient I have described at different periods. It will be observed that they are almost invariably high when compared with the normal.

Table III.

Date.	Blood-urea.	Blood cholesterol.	Œdema.
October, 1926 ..	—	209	—
November, 1926 ..	20	246	—
December, 1926 ..	19	294	Better.
January, 1927 ..	26	117	—
March, 1927 ..	23	348	Worse.
April, 1927 ..	29	528	Better.
December, 1927 ..	79	188	Much better.
March, 1928 ..	75	244	No œdema.

The subject of the blood cholesterol in nephritis has recently been carefully investigated by J. Maxwell in a large series of cases at St. Bartholomew's Hospital. He confirms the results of the numerous observers which Dodds, Davies, and I summarised in the communication already referred to. Maxwell found that an increase in the plasma-cholesterol is almost invariably associated with every type of renal œdema, and that though in chronic cases the actual height of the cholesterol figures is not necessarily proportional to the degree of œdema, its presence is evidence that the case will run a chronic course. He further concludes that renal œdema and the increased plasma-cholesterol are not related as cause and effect, but that both are probably the result of some toxic disease acting upon the cells of the reticulo-endothelial system.

As regards the reduced basal metabolic rate in cases of pure nephrosis, this factor has been stressed by Epstein, to whom we owe in such a large measure our knowledge of this group of cases. I have not personally experienced the success from the use of thyroid extract which he has claimed, and a good point of criticism is made by Murphy and Warfield, who point out that the water retention in the tissues of these patients gives them an illusive weight which renders estimation of the basal metabolism very difficult.

Pathological Aspects of Nephrosis.

It is not easy to speak with exactitude concerning the morbid anatomy of cases of lipoid nephrosis for the simple reason that they are seldom fatal, but run a very chronic course. It is indeed doubtful whether death ever occurs except as the result of some complicating or intercurrent disease. It is in this respect worthy of note that the termination is not infrequently due to a form of chronic peritonitis, possibly of pneumococcal origin, and perhaps due to accidental infection of the ascitic fluid. Cases of this type were included in a series reported by Dyke and have frequently been referred to by German authorities. When the kidneys of such a patient are secured, they are found to contain enormous quantities of cholesterol in the cells of the tubules and have the typical greasy appearance which has led to their being designated "myelin" kidneys. This condition was first described in 1902 by Kaiserling and Orgler, and examples have been demonstrated by McNee and others in this country. Through the kindness of my colleagues, Prof. James McIntosh and Dr. Lakin, I am able to show you a specimen this afternoon.

The histological characteristics of such kidneys are: (*a*) degenerative changes, usually confined to the tubules where the cholesterol esters are found in great profusion; (*b*) glomerular tissues little, if at all, damaged.

Rarity of Pure Lipoid Nephritis.

The number of cases in which it is possible to speak of a pure lipoid nephrosis is certainly limited. Elwyn, who has made important contributions to this subject, believes that in all cases there is an initial glomerulo-nephritis which often heals, leaving tubal damage which has resulted from the absorption of the pathological glomerular transudate. Against this view must be put that of Murphy and Warfield, who have actually been able to demonstrate the kidneys of a case in which not the slightest evidence of a glomerular lesion could be found. In cases such as the one I have described I find no evidence that there was an initial lesion affecting the glomeruli, and the opinion of Epstein and of the German physicians is also to this effect.

But we may, on the other hand, accept the possibility of a primary pure nephrosis, without suggesting that such a kidney may not easily undergo secondary damage of greater degree. An organ which is choked with cholesterol should from that fact alone be more readily susceptible to damage than is a normal organ. Or, if we examine the prognosis of such cases from the point of view of the possible effects of the prolonged hypercholesterolæmia, it is not necessary to suggest that such a blood condition is the result of renal damage, there is, indeed, no evidence for such a view, nor must it be assumed that the excess of blood cholesterol will produce a nephritis; we know, on the contrary, that patients with diabetes, or jaundice, or xanthoma may have hypercholesterolæmia for years without signs of kidney damage. We do know, on the other hand, that arterial lesions such as atheroma can readily be produced by cholesterol-feeding in animals; Scarff, in a recent series of experiments, has fully confirmed previous observations to this effect, and the work of Labbé and Heitz tends to show that the hypercholesterolæmia of chronic diabetes may be accompanied by such vascular changes that a very adverse effect on the general circulation, including the blood-supply to the kidneys, is to be expected.

There are, therefore, several reasons why cases of apparently pure lipoid nephrosis may subsequently develop signs of renal failure, and such a development is by no means incompatible with a primary condition

in which these features were completely absent. In the case I have described, for example, there appears during the last six months to have been a certain evolution which is perhaps ominous. The blood-urea and non-protein nitrogen have risen from their original normal level to figures which approach the low limits of the pathological. In addition to this, there seems to be a very slight, but definite, progressive elevation in the blood pressure, and if continued observation confirms these findings, we must, I believe, conclude that there is progressive change going on in the kidney. But even accepting such a development as the fate of a number of these cases, there remains a proportion in whom such an evolution never occurs, and we may, I think, draw certain conclusions from them, namely:—

1. That the only clinical evidence of nephritis presented by them is albuminuria.
2. That the balance of evidence is against the hypercholesterolæmia being an effect of renal damage.
3. That it is difficult to harmonise the localised histological appearances of the kidneys in these cases with the theory that this is a true primary renal disease.

Is Œdema the Result of Albuminuria?

Returning now to the problem of œdema, the question at once arises whether either the hypercholesterolæmia or the albumin-loss found in lipoid nephrosis will furnish the explanation of the œdema so conspicuous in these cases. As regards cholesterol, I have already pointed out that it does not appear to be the result of a renal lesion, but is rather the cause of the main renal abnormality. And when we inquire what relation it may have to the œdema, we are faced with two facts: (1) that in cases of hypercholesterolæmia due to jaundice or diabetes, there is usually no œdema, and (2) that, as Maxwell has shown, the cholesterol in "nephritis" does not vary in proportion to the œdema, and, therefore, these two features can scarcely be cause and effect.

When we examine the possible relation between the œdema and the albuminuria, we become concerned with the views of Epstein, whose work on lipoid nephrosis must rank as one of the great advances of recent years. For not only was this observer the first to describe fully the features characteristic of this disorder, but we owe very largely to him our present knowledge that high protein feeding is desirable in its treatment. Epstein's views are further remarkable in that he is almost alone in having put forward a plausible theory to explain œdema as a direct effect of a renal lesion. His view, if I have correctly understood him, is that the continued albuminuria causes such a depletion of albumin from the blood plasma that the normal proportion of albumin to globulin is eventually reversed. This brings about a lowering of the osmotic pressure in the circulating blood, and there is a consequent passage of water from the circulation to the tissues where the osmotic pressure is higher. Epstein's diet was specially chosen in an endeavour to replace as far as possible the albumin depletion by means of a generous supply of appropriate proteins in the food, and the frequent success of this diet lends apparent support to his theory of the mechanism of œdema. But in spite of its attractiveness this hypothesis has failed to convince the majority of the physiologists interested in the subject. It is clearly not possible to utilise such a theory to explain those types of œdema which follow starvation or faulty diet, or the œdema produced in inflammation and other pathological conditions, apart from circulatory failure, and it is perhaps on this account that the theory has found so little favour with the physiological school above referred to. Further, it is apparently difficult on the basis of this theory to explain the actual chemical composition of the œdema fluid; on the other hand, consideration of the writings of the pure physiological and pathological schools inclines one to the belief that they have perhaps not recognised the close association always encountered in clinical work in renal cases which exhibit both œdema and albuminuria.

When cases with cardiac œdema are carefu excluded, it is certainly very difficult to find a case so-called renal œdema in which albuminuria is no very marked feature, but I think that close inqui amongst cases of nephritis in pregnancy and acu glomerulonephritis always leads to the discovery an appreciable proportion of cases in whom the œde is out of all proportion to the daily amount of albun lost. If, on the other hand, we examine cases of pu lipoid nephrosis, it will, I think, be found th albuminuria may persist with a very high total da loss of albumin at a time when the œdema is rapic disappearing or almost absent, and if the theory blood depletion and lower osmotic pressure were t explanation of the œdema, this should not be so. W are, therefore, once more confronted with an impas and must face the fact that the albuminuria, which the one great index of a renal disturbance in cas of lipoid nephrosis, does not, on existing eviden explain the œdema in these cases.

Certain Phenomena of Diuresis.

We can obtain some further information releva to our problem by examining various methods which diuresis can be promoted in these cases. I once polyuria can be established the œdema su sides, and the mechanism by which polyuria can provoked should therefore throw indirect light on t mechanism by which the œdema is governed.

Of the diuretics which often act successfully "renal" œdema there are at least three groups, whi may be classed as follows: (*a*) urea and its precurso (*b*) alkalis; and (*c*) acid-producing salts. In t first group must probably be included the high prote diets, and I related how, in the case described, ur in large doses was responsible for a rapid diuresis a reduction in the œdema.

In sharp contrast to this method must be plac that in which alkalis are employed. No discussi of œdema can in any way be complete without so reference to the school of thought which holds th acidosis is an important, if not an invariable, featu of œdema. M. H. Fischer may be quoted as one the chief exponents of this view. His theory is large based on experiments on frogs, and with colloid substances such as gelatin. He believes that it essentially the swelling of the tissue colloids under t influence of acid which is the main source of œde in all cases. It would be impossible in the course a single lecture to discuss the interesting views this worker, which are frequently expressed in t vigorous language of an iconoclast. Fischer belie that alkalis are the essential basis for success treatment in practically all cases of œdema and nephritis, and very similar views, perhaps characteris by an equal enthusiasm, are to be found in the wo of Osman in this country.

The advocates of alkalis—and I may claim to numbered amongst them—have apparently nev been lacking in enthusiasm, for I have been interest recently to read a seventeenth century work Dr. William Coward, of this College, who was enraged by the presumption of certain authors w had dared to belaud the use of acids in medicine th he published a volume entitled "Alcali Vindicatum or, "The Acid Opiniator not guilty of Truth," which his enthusiasm for alkalis led him so far to cover with contempt a rival who had backed h favourable opinion of acids by the statement th "Seamen and Surgeons had been cured of the Scur be eating Oranges and Lemons in Spain," after th return. Ignorant both of the action of vitamins a of the effect of citrates on the reaction of the urin Dr. Coward in an outburst of sarcasm wrote, "I lo a Man who to make good his Cause tells half a Sto and draws an Argument from a Tarpaulin to uphe a main point in Physick."

Reverting to the use of alkalis in nephritis, must recognise that diuresis can frequently be induc by their use if the administration is pushed to sufficient degree. Osman gives as much as grs. 10 or grs. 2000 of alkali, in the form of potassium citra

otassium bicarbonate, sodium citrate, and sodium icarbonate to many of his cases, and in spite of ertain alarming accidents in the nature of tetany, appears that his method has not infrequently been uccessful in cases of mixed nephritis of desperate haracter. On the other hand, we must not ignore ne fact that diuresis in similarly desperate cases has ometimes been achieved by the use of calcium hloride. Blum and the Strasbourg school are chiefly esponsible for this work. When calcium excretion is ius promoted, the sodium content of the urine ncreases also, as shown by Keith, Barrier, and Whelan, ut the most interesting fact from the point of view f our immediate inquiry is that Salvesen and others ave established that such calcium administration ot only increases the urinary acidity but may actually use a severe acidosis. We are, therefore, faced ith the paradox that diuresis and improvement in the dema of nephritic cases can apparently be brought out either by substances which render the urine kaline, or by others which render the urine acid.

A possible explanation of this is afforded by the ork of Stieglitz, who by means of indicator dyes as brought forward evidence that the reaction of e actual cells of the kidney is always the opposite the reaction of the urine. And the same worker ntends that any measure which tends to change e normal titre of the renal blood will act as a imulus to the renal cells, and hence tend to produce uresis. We must further note that following the ork of Nash and Benedict there has been a tendency nongst biochemists to regard the breakdown of mino-acids into ammonia, which is one of the main otective mechanisms against excessive acidity of the od, as brought about by the agency of the kidney, d not, as was formerly believed, by the liver. It is ll too soon for any one to draw final conclusions m this mass of complicated observation, but it uld seem to point to the conclusion that the work of e kidney in cases of œdema is directed to compensa- g an existing derangement of the normal blood emistry, and though the strain of such compensa- n may damage the kidney the primary pathological ocess is an extra-renal one.

Experimental Œdema.

Turning now to the field of animal experiment. find a series of failures which in sum seems to to provide strong presumptive evidence against theory that œdema is the result of damage to kidneys. For as far as extirpation experiments concerned, no one has succeeded in producing ema by any operation on the kidney, and when we n to the various poisons which on intravenous ection cause a chemical nephritis, we find that with ingle exception none of them can produce œdema. e exception is uranium, and it appears that in mals poisoned by uranium a chemical nephritis l œdema can be produced if the water-intake is cibly increased simultaneously. I have seen it ted that the œdema of uranium poisoning occurs n when the animals' kidneys have previously been noved; but as I have failed to find corroboration the statement, I do not wish to stress it. I feel ot unfair, however, to point to the grossly artificial ure of these experiments, which must surely duce toxic effects on extra-renal tissues which y alone be sufficient to cause œdema, and that h is the case is the conclusion reached by many of se who have had most experience with this type experimental work. It is impossible to read criptions of these experiments, such as that to found in the monograph of Loeb, without being ressed by the dissimilarity between such experi- ntal œdema and that seen in pure lipoid nephrosis. l this work as a whole seems to me to support ner than challenge the belief that "renal" œdema of extra-renal origin. The same conclusion is ched if we examine the interesting experiments ntly devised by Aldrich and his associates, who e made prolonged study of the rate at which salt ition disappears after it has been injected into the skin of patients with various types of œdema. Without entering into details of their findings, it may be said that even in cases of so-called renal œdema they have found strong evidence of an abnormal avidity for water on the part of the tissues, both during and before the occurrence of the actual œdema.

Theories of Œdema.

Throughout this lecture I have made no attempt to explain the mechanisms by which the passage of fluid into the tissues, which we speak about as œdema, may be produced. No one, I think, who has given more than superficial attention to the enormous amount of work which has been done on this subject would presume to support any existing explanation of the facts with anything other than diffidence. Well-known treatises on the subject, such as the monograph by Loeb, or the work of Martin Fischer, tend to leave the reader in a state of confusion as great as that in which he may have begun his study of the subject, and we are, I think, forced to the conclusion that there is no theory of œdema before the medical world to-day which will explain all the known facts, but the theories which depend on the hypothesis that the œdema is a direct consequence of renal injury break down almost from the onset.

Elwyn, who must be quoted amongst those who have given particular attention to this subject, finds it impossible to do more than summarise existing facts, and put forward a tentative hypothesis to the effect that the œdema is a compensatory process. He believes that amongst the physiological constants of the body the blood volume is an important one —i.e., that in all circumstances, if life is to be maintained, the volume of the blood must remain constant. In cases of "renal" œdema, and of lipoid nephrosis as an outstanding example of such cases, he believes that reduction in urinary volume is the first compensatory mechanism to be brought into play and is directed to arrest the loss of albumin in the urine. From this he goes on to the belief that when this first great gateway of escape for the fluids from the circulation is partially closed, an increase in the blood volume would necessarily occur if some other gateway were not open. The only other avenue of escape for the fluid is into the tissues and thither it proceeds. This theory, as its author frankly says, is merely a statement of certain regulating mechanisms, and offers no explanation of the mechanisms by which the oliguria is produced or the transudation into the tissues brought about. Acceptance of it would seem to imply a change in the permeability of capillaries throughout the tissues, or, in other words, the existence of an extra-renal factor as a main factor in the production of so-called renal œdema.

General Conclusion.

I have now put before you the main reasons for my belief that *œdema in nephritis is at once suggestive of pathological change in tissues other than the kidney, and that such pathological change is not the result of nephritis, although it is more than probable that the renal and extra-renal damage have a common cause.* If this view is accepted, it seems to me to call for a fundamental change in our conception of the nature of nephritis, whenever that term is employed to describe a clinical association of œdema and albuminuria with or without hæmaturia, nitrogen retention, and cardiovascular changes. No one to-day would dream of regarding a case of acholuric jaundice, or of myelogenous leukæmia, as an example of splenic disease, and similarly I feel that the time has come when we must, at any rate in all cases where œdema is prominent, direct our attention first to the extra-renal tissues and search there for the factor that is the cause of pathological change of a very wide nature.

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(*Continued at foot of next page.*)

Lumleian Lectures
ON
EPILEPSY.

The Lumleian Lectures, 1928, delivered at the Royal College of Physicians of London

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LECTURE II.*

Delivered on March 27th, 1928.

THERE are several separately described diseases which have a close affinity with epilepsy; perhaps they are associated together clinically, or though not clinically associated the manifestations are very like or parallel to those of epilepsy; or they may arise under the same circumstances as does epilepsy. And the only successful treatment of some of them is that which is applicable to epilepsy. I submit that a metabolic dyscrasia is the causal factor of these several conditions, which are migraine, pyknolepsy, narcolepsy, vaso-vagal attacks, syncopal attacks, and tetany. Three of these are well known to occur, as does epilepsy, from local lesions of the brain, and these are migraine, narcolepsy, and tetany, and migraine is also met with in renal disease. There seem to be very good grounds for including these maladies in the same clinical and pathological group with epilepsy, of which some of them may be only varieties. I shall now put before you the relations between these maladies and epilepsy.

MIGRAINE.

Sometimes personal, but often hereditary and familial, this malady may appear in early childhood, or at any subsequent time, and tends to persist throughout life. The attacks are characteristically paroxysmal and often regularly periodic, and they often occur on waking in the morning, as if dependent upon some metabolic change which occurs more readily during sleep. In women they tend to cease during pregnancy. The occurrence of attacks of migraine in an epileptic person, though not ver common, is of profound interest and importanc The epileptic attack may alternate in regular perio with the attack of migraine. A patient, migraino during childhood, has lost the migraine at puber with the development of epilepsy, and vice vers Most remarkable of all are the cases first record by Gowers, in which epilepsy of many years' duratio ceased and was replaced by attacks of migrain which again lasted for many years and, with the disappearance, epileptic attacks again appeare In these cases it was as if the attacks of migraine an of epilepsy were interchangeable and that they we of a similar nature and due to a similar cause.

The symptoms of migraine may be usefully an justly divided into two strictly separate group because one of these groups so often appea without the other; indeed, in some patien the two groups never appear together, and others the symptomatology throughout life is co fined to one group only. The first group that of the hallucinations, paralyses, and ment states, and the second is that of the headache an vomiting. I maintain that a state of lowered blo pressure is always present with both groups. T symptoms of the first group almost exactly resemb the symptoms which occur in epilepsy, except in tw notable points. The one is that they are so tar in the onset and last for such a long time, in contr distinction to the flashing onset and short duration the epileptic attack. The other point is that t migrainous attack is never associated with convulsio The auras or hallucinations of migraine are the sam phenomena as those of epilepsy, but they last minut or even hours, instead of fractions of a second, an therefore admit of better analysis and descripti by the patient. They are most often visual an common sensory auras and only rarely of an auditor gustatory, or olfactory nature. The paralysis, aphas and mental states are in reality the same as in epileps but they last longer.

The symptoms of the second group have th correspondents in less degree in the headache, vomitin and vestibular disorientation which often follows t epileptic attack. In both migraine and epilepsy th seem to be the result of rapid increase of intracran pressure from actual swelling of the brain. migraine with headache there must be actual swelli of the brain to account for the headache and to accou for the remarkable paralysis of the individual ocu motor nerves, which only occurs in attacks in whi the headache has been unusually severe, and al for the sudden death which has been recorded in few cases during an attack of ophthalmople migraine. Recurring paralysis of the sixth ner with each successive severe headache, the paraly abating or disappearing in the interval betwe the attacks, can only be explained on a mechanic basis. The theory recently put forward that swelli of the pituitary body can account for the ophthalm plegia and some other phenomena in migraine in my opinion, unthinkable, because of the distan and highly protected position of the sixth ner On the other hand, increased supratentorial pressu from local swelling of the brain with pushing backwar of the brain stem and stretching and pressure up the sixth nerve at the foramen tentorii is an acceptal explanation, for it is in this way that sixth ner palsy is so commonly caused in cases of cereb tumour. Spitzer showed, in a series of autops upon subjects who had long suffered from migrai that dilatation of the lateral ventricle upon one si was a constant feature, and he attributed migrai to intermittent occlusion of the foramen of Mur by a ball-valve action of a turgid choroid plex It seems to me more probable that swelling of c hemisphere from time to time would be quite lik to cause unilateral distension of the ventricle, ju as a cerebral tumour often does. There is so evidence that actual swelling of the brain does oc in migraine with headache. I have already refer in my last lecture to a theory of epilepsy based up

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SOME PROBLEMS OF NEPHRITIS: REFERENCES.

(*Continued from previous page.*)

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anaphylactic reaction within the brain. I have a considerable number of cases in my records in which such conditions as asthma, paroxysmal swelling of the tongue, angio-neurotic œdema of other parts of the body, and urticaria occurred in patients with migraine, and this suggests the possibility that a local anaphylactic reaction within the brain, giving rise to local œdema and swelling, may be the cause of the headache in migraine and in epilepsy. It seems quite clear that the two groups of symptoms in migraine result from two distinct processes. The first group of epilepsy-like symptoms must result from some process which is nearly identical with that occurring in epilepsy; the second group of the headache and vomiting must result from local swelling of the brain. The two processes may coincide, producing the fully symptomatic attack of migraine. Much more commonly the second process occurs alone, so that migraine is best defined as paroxysmal headache. Often the two processes occur in the same patient, but never at the same time—the visual phenomena and the headaches constitute separate attacks. Sometimes the first group of symptoms is the sole manifestations of migraine throughout life.

A further close relation between migraine and epilepsy is that either condition may result from an organic lesion of the occipital lobe and that the visual hallucinations so occurring may be identical in character, and also that both conditions may arise in the course of renal disease. I have seen one excellent example of migraine from a lesion of the occipital lobe.

A middle-aged woman was admitted under my care into St. George's Hospital, her doctor having sent her to me as a case of cerebral tumour. She had a story of very typical migraine of three years' duration. I could find no sign whatever of any intracranial tumour, but we observed on several occasions very characteristic attacks of migraine with teichopsia and hemianopia. She was treated for migraine and the attacks ceased and did not recur during a peroid of about a year that she was under my observation. Some eighteen months later she became insane and was admitted to a mental hospital, where in a few months she died. Her doctor, who had never been satisfied with the turning down of his diagnosis of cerebral tumour, saw to it that an autopsy should be held, and thereafter took care that the pathological findings should be properly rubbed into me, for in the outer and under part of the occipital lobe corresponding to the original migrainous symptoms a cerebral tumour was indeed found.

Lastly, there are those rare cases, several of which are recorded by Gowers, in which the attacks seemed to be a blend of migraine and epilepsy or, alternatively, to be attacks of migraine in which severe convulsion occurred.

I submit that migraine may be considered as a protracted form of local epilepsy, having its seat of origin most often, but not always, in the posterior regions of the brain and having the especial association of swelling of the brain which gives rise to the conspicuous headache and vomiting. Migraine is usually regarded at the present day as dependent upon a metabolic dyscrasia, and its close similarities and relations with epilepsy are of some weight in the hypothesis that epilepsy has a similar origin.

NARCOLEPSY.

This remarkable condition was first noted by Westphal in 1877, and by Fischer in the following year, and was considered by them to be an unusual form of epilepsy. But Gelineau, in 1880, applied the name narcolepsy to his description of further cases, and considered that the condition was quite distinct from epilepsy. In English-speaking countries narcolepsy has been confused with all of the many conditions in which undue sleepiness and sleepy attacks occur, but in Germany this symptom-complex has been well recognised since Westphal first described it. An admirable monograph has recently appeared in *Brain* by Dr. Adie. This condition seems to persist with slight variations of intensity throughout life. It is more common in males. It seems to be personal and not hereditary, and the subjects present for the most a normal physical and mental make-up, but sometimes, as in epilepsy, there is mental deficiency, and there may be bodily peculiarities which have suggested endocrine deficiency.

Two quite different kinds of attack occur in nearly all the cases of narcolepsy. The one is the sudden onset of apparently normal sleep, which comes, usually at a moment of inattention, several times a day. The sleep lasts from a few seconds to a few minutes, it is rousable, and the patient is wide awake at once and knows that he has slept and sometimes he has dreamed and can describe the dream. Many patients have a warning of the attack in the way of a feeling of intense fatigue or a cephalic sensation and, thereafter, can so far repel the onset of the attack by an effort of will as to be able to sit down or get out of harm's way. But the attack is inevitable, however long it may be resisted, and is always the more severe the longer it is resisted. Some patients have headache after the attack. On occasion, however, the attacks may occur suddenly and without warning when attention is concentrated and in midst of action, and they were noticed under war conditions, during bombardments, and on listening-post duty, where the penalty for sleeping is death.

Instantaneous onsets of sleep in the midst of action are well-known phenomena in those who have been deprived of sleep for very long periods, and may be deemed almost normal phenomena under such circumstances when bodily metabolism must be seriously disturbed by the prolonged breaking of a fundamental physiological succession in life.

The second variety of attack is termed by Dr. Adie the "cataplectic" attack. It seems to be produced mostly from a sudden emotion, and this emotion may be of any kind, but it is most often a pleasurable emotion, and the most potent emotion is that which accompanies bursting into laughter. There is a sudden feeling of intense weakness in the limbs, which go flaccid. The patient drops anything that he may be holding and crumples to the ground, but often only into the sitting position. The eyelids drop and the head falls forward with the jaw dropped. There is complete inability to move and generally inability to speak, but consciousness is completely retained, so that the patient is able afterwards to recount every event and repeat every word spoken during the attack. Grimacing and protrusion of the tongue sometimes occur, as if there were some sort of facial spasm, and curious movements of the head may be seen, as if the patient were making partially successful attempts to keep his head upright and then failing; or similarly with the limbs. These movements have been regarded by some as convulsive movements, but from the clear description by one of Dr. Adie's patients, they were in his case due to repeated efforts to overcome an increasing weakness. The attacks last but a few moments or, at their longest, a few minutes, and recovery is almost abrupt. Often the patient has time to sit down or get to safety. Dr. Adie has shown very conclusively that in narcolepsy there is no fundamental distinction between the two varieties of attack. For the sudden attacks of sleep, usually without cause, may occur upon any emotion and the cataplectic attacks may occur spontaneously, and blends are met with in which cataplexy and sleep occur together.

In this connexion it is interesting to consider that hearty laughter is in all acceptation a "fit" of reflex origin, maintained by an impulse so strong as to often defy the control of the will. It completely interrupts the train of mental activity; and the hearty laugher collapses temporarily incapacitated from mental and bodily activity. In so many languages, too, there is an expression equivalent to our English, "to die of laughter," "to be paralysed by fear," and "to be speechless with rage." It would appear therefore that both the attacks of falling asleep and the cataplectic attacks of narcolepsy have their basis in a normal event, for we all fall asleep, and those of us who are risable may "die

of laughter," and that in narcolepsy we are not dealing with any qualitative change in the reaction of the human being to its surroundings, but rather with an exaggeration of and misplacement of events, that occur in the state we call normal. Following upon the brilliant researches of Pavlov upon the conditioned reflexes which prove clearly that sleep and internal inhibition are identical phenomena, Dr. Adie further correlates the tone-loss attacks and the sleep attacks of narcolepsy as phenomena of inhibition. He considers that this malady is a functional disorder of the nervous system, and that it is primarily a disorder of an endocrine nervous system made up of the nucleus hypophyseus and adjacent centres of the between-brain, and laying great emphasis upon the highly correct general principle that every expression of disordered cerebral activity from functional disturbance has a corresponding equivalent resulting from local organic disease of the brain, he proceeds to detail one case of his own and another recorded by Stiefler, in which true narcolepsy resulted practically as an isolated phenomenon from local organic disease of the brain, presumably in the subthalamic region.

In this short description of narcolepsy you will be struck by the parallelism between many of its signs and those of epilepsy, and by the fact that authority has advanced a metabolic disorder peculiar to the individual and, alternatively, a local lesion of the nervous system, and collectively, therefore, both of these conditions as the pathological explanation of the malady. And this is the same pathology which I am submitting to you as the explanation of epilepsy.

In Dr. Adie's monograph one is impressed by his contention for "true" narcolepsy, I presume in contradistinction to "false" narcolepsy, and I suspect that the latter collection would include those cases of narcolepsy which were in danger of showing epileptic phenomena. I cannot help feeling that there has been a little picking and choosing of the cases, and while I am sure, from my own observations, of the correctness of the clinical picture which he and others have drawn, and while I fully realise the immense value of the succinct and exact description of narcolepsy laid down by him in teaching the medical world how to recognise this malady, yet surely I have seen cases in which narcolepsy and epilepsy were conjoined, and I think that the observers of old time, from Westphal and Fischer onwards, were not all wrong when they classed some of the cases as epileptics. The arguments against the relation with epilepsy are not very strong. That it has no familial relation is met by the fact that epilepsy itself is so often a personal as opposed to a familial disease. That it does not occur before puberty agrees with the well-known class of the epilepsies which appear at puberty. That there is no convulsion in narcolepsy does not convince, for pyknolepsy was described as being without convulsion, and that is certainly an epilepsy proper. Moreover, the grimacing and protrusion of the tongue have not been either precisely described or explained by those who deny spasm in narcolepsy. When Adie states his determination that narcolepsy and epilepsy are not the same, because in narcolepsy some of the attacks are reactive, whereas in epilepsy the attacks are never reactive, I frankly object that it has been laid by great authorities, including Sir William Gowers, that the most frequent of all the tangible excitants of the epileptic fit is fright, and that I have seen many examples of this, such for instance as a lad who was a compositor's apprentice, who one day standing at work before his case, suddenly saw a train of great rats run from behind it across his bench. He threw his first fit there and then, and that same day, in my presence at the National Hospital, had two other severe and typical general attacks of epilepsy. Moreover, I do not see why the multitudinous records of reflex epilepsy from almost every possible form of stimulus, both psychic, special sensory, and sensory, and occurring indiscriminately in idiopathic epilepsy, organic epilepsy, and symptomatic epilepsy should be excluded from the class of attacks which are called "reactive."

It would seem, therefore, that narcolepsy is usually a malady per se, but that it is closely parallel with epilepsy in its mainfestations, and that it has a similar pathology in a metabolic dyscrasia and in local lesions of the nervous system, but that in some cases the nature of the metabolic change is such as to produce a coincidence of the two diseases in the same patient.

PYKNOLEPSY.

Friedmann, in 1906, separated from among the various forms of epilepsy a type which he deemed worthy of separate description. It was characterised by the somewhat fulminant onset in childhood of attacks indistinguishable from the minor attacks of epilepsy, which becoming very frequent and sometimes innumerable, persisted for years with an unvarying monotony of character, but were associated with no ill-health and with no impairment of mental or physical development. They were utterly uninfluenced by treatment and invariably came to a spontaneous end some time after puberty, never again to occur. Heilbronner and Stier confirmed his observations and named the condition "pyknolepsy" from the characteristic frequency of the attacks, and wished to separate the condition as entirely apart from epilepsy and a malady sui generis, and Dr. Adie has recently published an excellent monograph upon the subject. The attack in pyknolepsy is said to be always an inhibition of the higher psychical processes lasting from five to ten seconds; the power of speech and of voluntary movement is in abeyance, but the automatic movements are retained; the patient stands with the limbs relaxed, staring vacantly, but he never falls and never drops anything that he is holding; the lids may flicker, the eyeballs may roll upwards, but there are no convulsive movements and consciousness is never entirely lost. I have seen many cases of pyknolepsy which corresponded exactly to the type of Friedmann and Adie. I have seen many others which corresponded, except that each presented some feature which betrayed the presence of epilepsy. Thus I had one case whose sister had major epileptic attacks, another very typical in every way, but that he had had four severe general epileptic attacks; another who always fell in his attacks and, again, one who always had convulsion of the face and upper limbs. Yet these were all cases in which the attacks were multitudinous, in which high intelligence was preserved, which were rebellious to treatment, and which came to a spontaneous and permanent cure somewhere about the age of 20 years. One of my patients had to be removed from public school on account of the disturbance his innumerable attacks caused and was under my care at the National Hospital. During the period of his most frequent fits he matriculated and graduated as a Bachelor of Science. He has now had no attacks for years and is a master at a public school. Any physician who sees many cases of epilepsy will be able to pick out some which answer exactly to the description of pyknolepsy, but the number of cases which just fail to correspond because they show some typical feature which brands them as cases of epilepsy are so many that the contention that pyknolepsy is a disease sui generis and, apart from epilepsy, falls to the ground utterly. It is, in fact, simply a variety of epilepsy. I take it that variation in the nature of the metabolic disturbance which underlies epilepsy is responsible for type and the constancy of the phenomena which result. This description of pyknolepsy has, however, been very useful, for it has pointed out to the medical world that in epilepsy provided that high intelligence be maintained and education be uninterrupted, though the attacks be very numerous over many years and though treatment be entirely futile, there is good hope of complete and lasting recovery.

Vaso-vagal Attacks.

These curious attacks which make up a very definite syndrome and which have an important bearing upon epilepsy and conditions related to epilepsy, were first written about by Bonnier in his treatise on Vertigo under the term "syndromes nedullaire." Gowers was, I know, well conversant with the condition for many years before he published a lecture in THE LANCET in 1907, entitled Vagal and Vaso-vagal Attacks. This work does not seem to me to have received the attention in medical literature that its truth and importance merits.

The attacks were called vagal attacks because of the common occurrence of epigastric sensations of discomfort, of cardiac discomfort, and of respiratory constriction sometimes associated with an all-pervading impression of impending death, comparable to a mild degree of that which occurs in angina pectoris. They were called vasal because of the conspicuous pallor of the surface and coldness of the extremities. For these same reasons Bonnier called them "medullary syndromes." Gowers placed them on the borderland of epilepsy because some of his patients who had vaso-vagal attacks were frank epileptics and because of the change of mental state and semi-conscious condition during the attack. He placed them also close to migraine, as some of the patients also had migrainous attacks and because of the slow lasting aura, the prolonged symptoms, and the conspicuous surface pallor. He said: "If we can conceive a minor epileptic attack that is extended, its elements protracted so that the aura, the pallor, and the semi-consciousness last minutes or hours instead of fractions of a second, its features would be so different that its nature would not be suspected. Velocity is an essential element in the attack of ordinary epilepsy, but it does not preclude the possibility of deliberation in attacks not far removed from epilepsy." Gowers attributed the ashen pallor and the cold extremities to general vaso-constriction, as was fashionable in the pathology of his time, but I am convinced, as the result of many observations, that the pallor at the commencement of the epileptic attack and that seen in the vaso-vagal attack, the attack of migraine, and in the syncopal attack, are all due to the same cause, and that is a general fall in blood pressure. In the vaso-vagal attack one has plenty of time to accurately determine this fall of blood pressure.

I have seen many patients with vaso-vagal attacks, and in one of these I have observed the details of the attack from start to finish on at least 20 occasions. These have been so interesting and so highly important in connexion with my subject as to warrant my describing them to you in detail.

The patient is a lady of strenuous life and of athletic habits, with no family history of epilepsy or of migraine, but she has three times in her life fainted and fallen like a stone—once in childhood at the sight of an accident, once on the receipt of unexpected bad news, and once on being shown at her own request a pathological specimen in which she was greatly interested. The attacks never occur when she is feeling thoroughly well, but there is always a premonitory state of bodily ill-feeling and negative emotional tone. They begin abruptly with a general feeling of weakness of the limbs, soon followed by a general impairment of consciousness, which she calls a "stupid head," in which she cannot concentrate nor be very direct in her speech, and in which she is restless to the extent that she seems unable to sit or lie down, by which she means she knows well that the attack may be mitigated or aborted. She can, by a strenuous effort, delay the development of the attack so that she can get home or into a shop when walking in the street, but such delay seems always to increase the severity of the attack. The skin becomes increasingly pale and ashen and the extremities become very cold. Then there is a feeling of restriction of respiration referred to the lower chest. It is never painful nor associated with any fear of death, but the patient will clutch at the lower chest and say that she has difficulty of breathing, but there is no dyspnœa. At this stage the blood pressure falls further and somewhat rapidly, but there is no increase in the pulse-rate, which is somewhat remarkable. Hearing becomes increasingly distant and vision pales, and consciousness is lost somewhat suddenly and so completely that this patient has fallen downstairs with considerable bruising without any after memory or with the sole residuum that she heard herself fall but felt nothing. Consciousness is usually lost for a few seconds only, but in severe attacks it may be lost for as long as a minute, and in this case there is always convulsion. It is of a clonic type and commences, and is most conspicuous, in the face, and spreads thence to the neck and arms, but never to the trunk or legs. It lasts a few seconds. Consciousness is regained slowly and this is never followed by sleep. There is no enuresis. There is no consequent headache, but the patient is somewhat knocked out and has a stupid head and complete anorexia for the rest of the day. There is much coldness and shivering as the attacks pass off. These attacks may abort and the symptoms may cease at any stage of their development. The shortest will last a quarter of an hour and, in the longer attacks, it may be from an hour to several hours before consciousness is lost. They commenced about the age of 22 years and were numerous between the ages of 25 and 30 years, two having occurred in one day and often several a week. Now, in later life, they are very rare and occur only at intervals of years.

This story shows a good example of the vaso-vagal attack, but it is specially important in demonstrating the occurrence of convulsion in many of the attacks which did not occur in Gowers's cases, and this convulsion brings the condition very near to epilepsy. The picture of this case will at once bring forcibly to your minds Gowers's simile of a very long-drawn-out minor attack. There is also a very close resemblance between such attacks and migrainous attacks. For if you take away the headache and the vomiting and the visual symptoms from a severe attack of migraine, you will leave the low blood pressure, the ashen countenance, the bodily coldness, the mental and physical disability, and the absolute anorexia which characterise many vaso-vagal attacks.

When the patient I have just described to you was nearing the deeper stages of a severe attack, someone came into the room who had considerable experience of epilepsy, and he witnessed the convulsion and slow return to consciousness, and he told me forcibly that I was deceiving myself in not calling such an attack frank epilepsy because the patient was a close relative of my own. But I know that vaso-vagal attacks are not epileptic attacks, though like the attacks of migraine and narcolepsy, they may mix clinically with epilepsy and are amenable to the same medicinal treatment, and we shall do well to follow Gowers and to class them as distinct but belonging to the same clinical and the same pathological group.

Syncopal Attacks.

I have often thought deeply why fainting attacks have been so stringently separated as having no relation with epilepsy, and I suppose it is because the lowering of blood pressure is slow enough and prolonged enough to be so obvious, and because the syncopal attack so often appears as an affective reaction to some very definite though often trivial cause. When one considers the distinction which authoritative writers have made between epileptic and syncopal attacks, one finds the argument strained and hard to accept and the distinctions neither absolute nor applicable to many of the cases. I hold very strongly that the syncopal attack is not an epileptic attack, but I am convinced that it is a phenomenon of the same order and dependent upon a similar pathology and that it should be classified in the same group with epilepsy, migraine, narcolepsy, and vaso-vagal attacks.

The syncopal attack has a smaller incidence upon the population than has epilepsy, and in those who suffer, syncopal attacks are for the most much more rare events than are epileptic attacks in epileptic persons. They are usually personal, but they may be familial and hereditary. They do not commonly commence in childhood, but often more after puberty and, like the attacks of epilepsy and of migraine, they tend to persist during the whole of life, but to become rare as age becomes advanced. The onset may be quite sudden and the return to consciousness rapid; more often the onset is slow with obvious signs and symptoms of the lowering blood pressure before consciousness is lost and consciousness returns through a period of dazedness. As I have myself

witnessed the instantaneous attack and the slow attack occur in the same patient, confusion with minor epilepsy is here unlikely. Surely, whether the attack is rapid and very short, or whether it is slow and longer, will depend upon how rapidly the blood pressure falls and how quickly it regains the normal. As this rate of onset and recovery is one of the few actual points in the attack which are held to distinguish epileptic from syncopal attacks, the impossibility in thus separating the two conditions becomes apparent. Another point is that the syncopal attack is so often an affection reaction from a mental impression, from fear or horror, from the sight of blood, or from a stuffy atmosphere, but sometimes the syncopal attack has no tangible cause whatever and, further, the epileptic attack may be an affective reaction, the narcoleptic attack is usually so, and the migrainous and vaso-vagal attacks may, on occasion, be thus produced. This distinction, therefore, will not serve, and one has to make a diagnosis rather from the course of the case than from the nature of the attack. What has never been explained is why in some persons, who are otherwise healthy and normal, should there be this tendency to sudden fall of blood pressure with loss of consciousness, either spontaneously or as an affective reaction from causes which are utterly ineffective in producing like phenomena in the majority of the community. I submit that those otherwise healthy people who are subject to syncopal attacks have a personal metabolic peculiarity not far removed from that which I have suggested to you may be the underlying factor in epilepsy, narcolepsy, vaso-vagal attacks, and migraine. I submit that the fall of blood pressure so conspicuous in the syncopal attack is an essential element in all the others, and this, with the clinical similarities between these maladies, binds them together into one group.

Convulsion in Syncopal Attacks.

I wish now to draw your attention to the occurrence of convulsion in syncopal attacks. It is much more common than is usually allowed. Kussmaul and Tenner first proved that anæmia of the brain from any cause, including lowering of the blood pressure, might result in general convulsion. Forensic medicine experts have always allowed convulsion in syncopal attacks. Physicians have usually dismissed convulsion in their description of syncopal attacks with the remark that there may be a few twitchings of the muscles of the face, and have made the occurrence of distinct convulsion the standard of separation between the syncopal and the epileptic attack. Dr. Sutherland has recently said very definitely that whenever the blood pressure drops suddenly to below a certain point there must be convulsion. He was referring to the explanation of convulsion as it occurs in the Stokes-Adams syndrome and in paroxysmal tachycardia, and he dismisses such convulsion as having no connexion with epilepsy, but as the simple effect of dropping of the blood pressure, and he denies any justification of the term "cardiac epilepsy." He does not, however, account for the fact that only a few of the cases of heart-block, even with very long asystolic periods, have convulsions, and that this phenomenon is rare even with the most severe cases of paroxysmal tachycardia. Further, in cases of heart-block, I have seen frequently recurring minor attacks which were characteristically epileptic and which had never occurred before the heart-block developed. I have seen also local attacks and the usual convulsive attacks confined to face and upper extremities, and slow-drawn-out attacks like vaso-vagal attacks and severe general convulsions, and therefore I submit that there is a second metabolic epileptic factor which determines the occurrence of epileptic manifestations in these cardiac cases.

Alcohol Puncture and Syncopal Attacks.

In the performance of alcohol puncture for the relief of neuralgia, peripheral facial spasm, and painful periosteal points I have on at least 20 occasions observed syncopal attacks, and in every case these were associated with convulsion, commencing with deviation of the eyes and a gurgling sound in the throat and followed by facial clonic spasm, often spreading to the arms and sometimes becoming general and occasionally severe. The attacks commenced with the usual facial pallor and nausea and complaint on the part of the patient that he felt faint, the convulsion lasted perhaps half a minute and recovery was rapid and complete. All the patients were men who seemed otherwise healthy. The attacks seemed to have no relation to the pain or discomfort of the procedure nor to the amount of local anæsthetic or of alcohol used; indeed, I have seen them most often in injections upon the facial nerve, where the amount of either used would be less than five minims. Curiously enough, I have never seen a syncopal attack to occur in cases where a successful puncture into the Gasserian ganglion has been made and where both the pain and the shock effect might be deemed to have been greatest. Another physician, who has great experience of alcohol injections, tells me that he has observed similar syncopal attacks with convulsions in needling operations where no local anæsthetic nor alcohol have been used, as for, in example, in lumbar and cervical puncture.

These attacks which I have just described were obvious syncopal attacks and they were associated with convulsion in no way distinguishable from that of the epileptic attack. They occurred in a very small percentage of the subjects operated upon, and I submit that their occurrence was determined by a personal metabolic condition of the patient at the time which is not far removed from the underlying cause of epilepsy.

TETANY.

The association of epileptic manifestations with those of tetany, though they may be rare, are of importance in the argument that epilepsy has its origin in a metabolic dyscrasia, for tetany is provedly the result of metabolic disturbance, for it can be produced by calcium deprivation and by parathyroid extirpation, and removed thereafter by calcium administration and by parathyroid feeding. In rare instances it may appear as the result of a local lesion of the brain, and there are a few cases recorded in which both epilepsy and tetany resulted from a local lesion of the brain. Tetany has been often associated with the convulsions of childhood. In the clinical descriptions of tetany in its severe form Gowers calls attention to the occurrence of general convulsions of an epileptic order, and von Fraenkel Hochwart fully confirms this. Further, Gowers records the occurrence of tetany in association with vaso-vagal attacks. On the other hand, it is well known that the sudden onset of general tetany is usually associated with sudden loss of consciousness, as is the general epileptic attack. I wish to put before you two cases which will serve to illustrate this subject.

A woman well past middle age was admitted under my care at the Queen-square Hospital as an epileptic, on the grounds that she had for three years suffered from attacks in which she lost consciousness and fell and was generally convulsed, and thereafter experienced great pain and stiffness in her limbs. Immediately after admission she had an attack which was typical tetany in the four limbs, and it was discovered that a very complete thyroidectomy had been performed rather more than three years previously. She presented no symptoms of myxœdema. She had no general convulsion in hospital, but in one severe attack of tetany consciousness seemed to be greatly impaired or even lost. This case recovered rapidly upon calcium and parathyroid treatment.

A middle-aged woman came to my out-patient department at Queen-square with all the signs of tetany well marked, but with no obvious cause for these. I was busy for some time demonstrating so instructive a case to my class and admitted the patient into hospital without examining the retinæ. I was informed later in the afternoon that she had intense papillœdema. We were unable for some time to make any localisation for the tumour, but later slight nerve deafness appeared on one side, and the patient's condition

being urgent, a lateral recess tumour attached to the auditory nerve was exposed and removed. We were much troubled with the non-subsidence of the papillœdema and the other symptoms for a while, and by mental aberration, but these were obviously due to a hydrocephalic cystation from tissue dislocation, which righted eventually with a complete recovery of sight of mentality and of the tetany.

I hope that I have in some degree attained my object in bringing before you in this lecture a real relation, both clinical and pathological, between epilepsy and these several other diseases.

RHEUMATISM, TONSILS, AND GLANDS.

AN INQUIRY INTO THE RELATION OF TONSILS AND ENLARGED GLANDS TO CARDIAC DISEASE IN RHEUMATIC CHILDREN.

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DURING recent years many papers have been published on the subject of rheumatism, and many writers have produced statistics in an attempt to assess the importance and results of removal of the tonsils. Some of the figures seem to suggest that the tonsil is of small importance, and its removal of no great use; others suggest the contrary. It was because of this apparent uncertainty that we have tried to follow up cases of chorea and rheumatism during a period of six years, to re-examine them, and to produce figures showing the relationship between the tonsil and cardiac disease in rheumatic children. The cases under consideration were all children under the age of 12 years admitted to the wards of the Children's Hospital, Birmingham, under one of us (K. D. W.) between Jan. 1st, 1921, and Jan. 1st, 1927. All the in-patient cases of rheumatism and chorea are included, and of necessity these comprise the more severe types seen during this period, because, owing to lack of beds, only children whose symptoms are urgent gain admittance to the hospital. The death-rate in the series under consideration reflects the severity of the infection. Approximately half the children had their tonsils removed while in hospital.

Out of a total of 153 cases, 15 died in hospital, leaving 138 whom we attempted to follow up; and of these, 71 were re-examined and 9 were found to have died since discharge from hospital. Among the remainder (58), classified as untraced, there were several children who are known to be in convalescent homes or institutions, where they could not be re-examined; these have been excluded from our figures.

The traced cases have been divided into three groups:—

1. *Normal*, which includes only cases who show no evidence of any cardiac abnormality or disability.

2. *Damaged*, including cases showing some evidence of cardiac abnormality, such as slight or doubtful enlargement, extrasystoles, or a systolic apical murmur without any definite evidence of valvular or myocardial disease. A number of cases in this group showed only a persistent tachycardia.

3. *Cardiacs*, comprising all cases with definite enlargement or valvular disease, and all cases with myocardial damage. Several of this group have no symptoms and state that they enjoy normal good health.

In this paper the state of the heart has been taken as a measure of the damage wrought by rheumatism, partly because it was considered the most definite and reliable index, and partly because alternative details such as height, weight, and general health would be liable to grave inaccuracy unless checked by comparison with a similar number of normal children drawn from the same population. This method of control proved impracticable. It was found impossible to indicate accurately either the severity of the original disease, or the degree of recovery. Children who, on admission to hospital, had such extremely severe pancarditis that they seemed almost certain to succumb to heart failure, have made good recoveries and lead active lives, while, on the other hand, some who did not seem likely to become victims of permanent cardiac disease have since developed organic lesions.

TABLE I.

Traced cases: males, 26; females, 54 = 80.

Original disease	Chorea, 28.	Rheumatism, 52.
Present state.	Number and percentage.	Number and Percentage.
Heart normal	15 (53·5)	12 (23·07)
,, damaged	10 (35·7)	10 (19·2)
Cardiacs	3 (10·8)	21 (40·38)
Dead	0	9 (17·35)

Table I. shows that chorea is very definitely less likely to be followed by cardiac disease than is frank rheumatism. This accords with common experience. It also shows the large number of girls affected, and demonstrates that rheumatism in its severe form is nearly twice as common as severe chorea. Those children who had both chorea and rheumatism have been placed in the rheumatic group.

Beneficial Effects of Tonsillectomy.

It is our present practice to regard all tonsils as suspicious foci of infection in rheumatism, and to view enlargement of the glands at the angle of the jaw as a definite sign of infection of the lymphatic system via the tonsils, and as an absolute indication for their early removal whatever their size or appearance. During the period under review, however, enlarged tonsils only were removed.

At first the operation was approached with some misgiving because it was feared that such a disturbance might upset the patient severely; but experience proved reassuring, and suggested that the operation might be performed early with beneficial results, so that it is now our practice to remove tonsils as early as possible, even in the presence of acute chorea or with symptoms of severe rheumatic infection, provided that signs of heart failure are absent. This practice seems to be justified by results, for it is unusual to find any disturbance, and exceptional to be able to tell the day of operation from inspection of the temperature chart, while the patients often show a definite improvement in symptoms, appetite, and condition soon after.

Tonsillectomy was done in 35 cases of the above series, in 9 children with chorea and 26 with rheumatism. Thus, the more severe cases were more frequently operated upon.

TABLE II.

Present state.	Tonsillectomy: 35 cases.		Non-tonsillectomy: 45 cases.	
	Number and percentage.		Number and percentage.	
Heart normal	15 (42·8)		12 (26·7)	
,, damaged	8 (22·8)	48·5	12 (26·7)	60
Cardiacs	9 (25·7)		15 (33·3)	
Dead	3 (8·7)		6 (13·3)	

Table II. seems to show quite definitely the beneficial effect of the removal of the tonsils, for although the operation was performed more often in the rheumatic group—the severe infection which tends to damage some 60 per cent.—yet the cases operated upon show a decidedly smaller incidence of cardiac disease than the unoperated. The higher death-rate in the unoperated cases must, to a certain extent,

be discounted as being due in part to the fact that some children were admitted to hospital far too ill for any operative proceeding, and died without improving. In order to reach any conclusion as to the ultimate results of tonsillectomy, the deaths should be discarded and only the 71 cases re-examined should be considered.

Table III. shows the cases rearranged in two main groups—32 cases without tonsils contrasted with 39 cases with tonsils—and in further sub-groups to bring out the effect of the presence of enlarged glands.

TABLE III.

Present heart condition ..	Normal.	Damaged.	Cardiac.	Totals.
Present throat condition—				
Tonsils but no glands ..	5	2	2	9
,, and glands ..	6	9	15	30
Glands but no tonsils ..	1	2	1	4
No tonsils, no glands ..	15	7	6	28
Totals	27	20	24	71

It can thus be seen that of operated cases only 4 out of 28, or 14·3 per cent., show enlargement of the glands at the angle of the jaw, while 30 out of 39, or 71·7 per cent. of the unoperated cases show enlargement. The significance of the figures is emphasised when the results are shown as percentages, as in Tables IV. and V.

TABLE IV.—*Rheumatic Children.*

Heart condition.	Healthy throats.	Tonsils and glands.
	Number and percentage.	Number and percentage.
Normal (27 cases) ..	20 (74)	6 (20)
Damaged (20 cases) ..	9 (45)	9 (45)
Diseased (24 cases) ..	8 (33)	15 (62·5)

TABLE V.

Throat condition.	Normal hearts.	Damaged hearts.	Diseased hearts.
	Number and percentage.	Number and percentage.	Number and percentage.
Normal (37 cases) ..	20 (54)	9 (24·3)	8 (21·7)
Tonsils and glands enlarged (30 cases)	6 (20)	9 (30)	15 (50)

It may be urged that the numbers under consideration are too small to allow of any definite conclusion, but the results of the analysis of the figures in the table are so striking that it seems difficult to avoid the inference that the tonsils, and especially tonsils associated with enlarged glands at the angle of the jaw, have an important bearing in rheumatic infection.

There are two further considerations which suggest that the glandular enlargement is of some importance in children and young people. While chronic tonsillar infection in them is very frequently accompanied by enlarged glands, this association is relatively seldom seen in adults. Further, in children who die of acute rheumatic heart disease the enlargement of bronchial and mediastinal glands is always a marked feature of the post-mortem findings. The glands are not very big, but all of them are somewhat enlarged, so that they are far more obvious than in children who have died of other conditions.

The children who form the subject of this communication were treated, as far as was possible, uniformly. Prolonged rest was considered of first importance, the child being kept flat in bed with only a low pillow, and as quiet as possible. At first all children were fed by a nurse, and allowed to make no unnecessary effort. Salicylates were given during fever and when any articular signs were present, but cod-liver oil is thought to be more useful when the temperature has settled down. The diet was in all cases confined to milk, milk foods, and jellies at first; a simple, well-prepared, varied diet being allowed later. Sunlight, open air, and good general conditions were found to be important factors, but the children who did best were those with devoted mothers, not necessarily in the best circumstances, who conscientiously carried out the directions for treatment after the child left hospital. The return to activity was gradual and was controlled by observation of the pulse-rate before and after any effort. The average stay in hospital was slightly over three months, but many children spent long periods in convalescent homes in addition, and the total period of rest probably averaged over six months.

Conclusions.

1. Chronic infection of the tonsils is commonly associated with rheumatism and chorea in children, and frequently causes enlargement of the glands at the angle of the jaw.

2. Children who have rheumatism are less likely to develop organic cardiac disease if the tonsils are completely removed.

3. In such children tonsillectomy results in the disappearance of the enlarged glands in over 70 per cent. of cases.

4. While the enlargement of the glands may be taken as an absolute indication for the removal of the tonsils in rheumatic children, it is probable that, in order to obtain the best possible cardiac results, tonsillectomy ought to be performed before the glands become enlarged.

SIGNS BY WHICH TO DIAGNOSE CONGENITAL DISLOCATION OF THE HIP.

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THE treatment of congenital dislocation of the hip-joint results in a complete cure if reduction is made early enough. If treatment is commenced before the age of 3 the percentage of cures reaches 75, and every additional month after that age diminishes the likelihood of a perfect result. In the older patient it is not so much the difficulty of reduction that impairs the result as the secondary changes in the acetabulum and the head of the femur, which conduce to chronic arthritis and premature old age of the joint. That early reduction is essential is well known, and yet few patients with congenital dislocation of tne hip reach hospital before the age of 3, and very few of these are sent up with the correct diagnosis. The majority of them have been examined at some time or other by their family physician, who has failed to diagnose the presence of a dislocated hip.

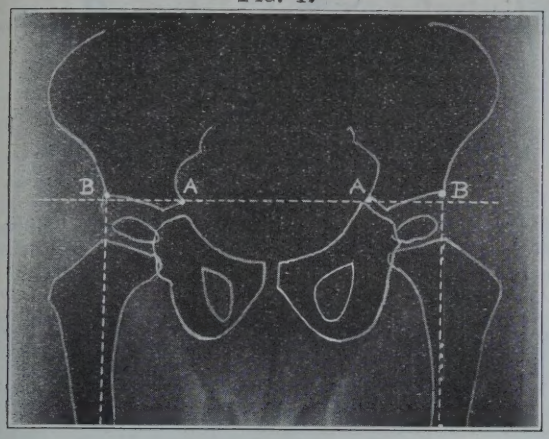
When to Suspect the Presence of a Congenital Dislocation of the Hip-joint.

The first thing to search for is something which will draw attention to the hip-joint, just as earache attracts attention to the ear. This something is late walking. Any child who is not walking at the age of 18 months, or who did not walk until some time after that date, should be suspected of having a congenital dislocation of the hip-joint, and the hip-joint should be examined.

The classical signs of a congenital dislocation depend on palpation; the head of the femur cannot be found in its normal place in Scarpa's triangle, but can be felt on the dorsum of the ilium.

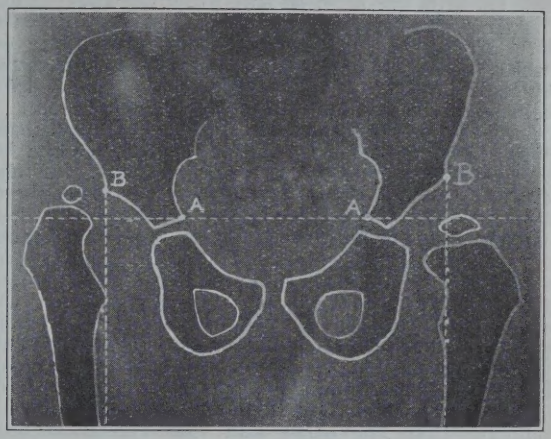
Palpation of the head of the femur in a baby is difficult, even when the child is docile, and I submit

FIG. 1.



X ray silhouette of the pelvic girdle in a normal child (adult male type).

FIG. 2.

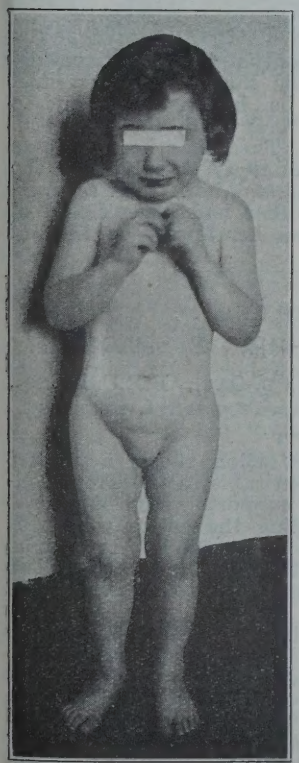


X ray silhouette of the pelvic girdle in a child with congenital dislocation of the hip (adult female type).

that the diagnosis can be made and ought to be made with certainty by inspection alone. Inspection will reveal three characteristic features: (1) the female profile; (2) dipping of the shoulder when the child walks; (3) shortening of the thigh.

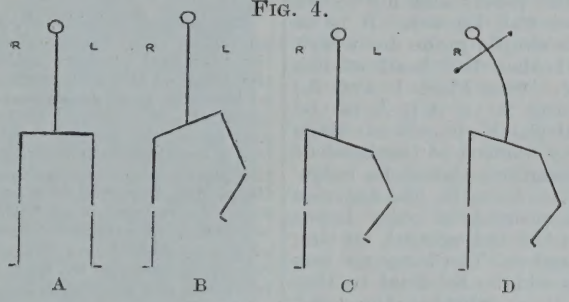
The female profile.—If a normal child is placed flat on the couch, supine and the lateral outlines of the trunk and legs are observed from above, its outline or profile resembles that of an adult male (Fig. 1). In the child with a congenital dislocation of the hip the outline approximates to that of an adult female (Figs. 2 and 3). Fig. 1 shows the X rays of a normal child, a boy aged 2; it has been taken with a soft tube, so that the soft parts as well as the bones are visible. Fig. 2 shows the X rays, taken in a similar manner, of a boy aged 1 year and 10 months with a congenital dislocation on the right side and a subluxation on the left. The difference in the outline of the body is clearly shown; it is most obvious on the waist line. There is an adult female profile on both sides in Fig. 2 and in Fig. 3. The trochanter, being further from the midline, gives the appearance of an increase in the width of the pelvis and the presence of a waist.

FIG. 3.



Photograph showing hip outline resembling that of adult female.

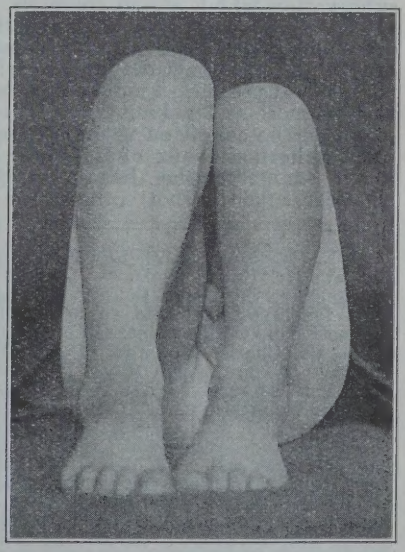
FIG. 4.



Trendelenburg gait.

Dipping of the shoulder when the child walks.—If the child has commenced walking, the mother will often volunteer the statement that the child has always had a painless limp. This is not really a limp, but a pecularity of gait which is hard to define. It consists of a swaying of the trunk towards the affected side whenever weight is borne on the affected leg. If the doctor concentrates his attention on the legs he will not observe the limp at all; if he watches the point of the shoulders the sideways sway of the trunk becomes apparent, because the shoulder dips down on the affected side when weight is borne on that leg. When the dislocation is bilateral the sway is first to one side and then to the other. The gait then becomes "rolling" and more obvious. When the normal individual takes one leg off the ground, say the left, and balances on the other, the weight of the trunk would naturally depress the pelvis on the left side because the supporting leg is not directly under the line of the body-weight. To prevent this, the muscles of the right hip-joint contract strongly and tilt the pelvis down on the right side. This is the normal (Fig. 4B). If for any reason the abductor muscles lose their power they cannot tilt the pelvis down on the right side, and the body-weight causes the pelvis to tilt down on the left (Fig. 4C); then the patient, to prevent himself from falling sideways to the left, throws his trunk over to the right, so that the line of the body-weight passes down through

FIG. 5.



Method of demonstrating the shortening of the thigh in unilateral dislocation.

the supporting leg (Fig. 4 D.). It is this tilt of the trunk towards the affected side when the affected leg is bearing weight that gives rise to the characteristic gait. In a congenital dislocation the abductor muscles, although powerful, are ineffectual, because they lack the fulcrum which normally is supplied by the head of the femur fitting into the acetabulum.

Shortening of the thigh.—In a unilateral dislocation the leg is always short, and the shortening can be made apparent without a tape measure. If the examiner takes hold of the legs of the recumbent child, one in either hand, flexes the knees fully then flexes the hips through 90 degrees so that the femurs are vertical, and approximates the two legs so that the feet are flat on the table and keeps them square with the trunk, he will see that the knee on the normal side projects upwards half an inch or so beyond the knee of the affected side (Fig. 5). This is any easy method of demonstrating shortening of the thigh. For a bilateral dislocation the test is of no value. The sign only demonstrates that one leg is shorter than the other and that the shortening is somewhere above the knee-joint, but for practical purposes it nearly always means in the young child a unilateral dislocation of the hip-joint.

These three signs, depending on inspection only, are sufficient in themselves to warrant a diagnosis of congenital dislocation of the hip-joint.

How to Confirm the Diagnosis by X Rays.

The X rays confirm the diagnosis, but the normal radiographic appearance of the pelvis and hip-joints in very young children is not well known. It is as well, therefore, to have some simple guide by which one can tell at a glance whether the head of the femur is in its normal place. (See Figs. 1 and 2.) Draw a horizontal line joining A to A; A is the innermost part of the ilium at the Y-shaped cartilage of the acetabulum. The bony nucleus of the head of the femur, as seen in the radiogram, should be below this line. Draw a vertical line from B, the anterior inferior spine (which is the prominent outer lower angle of the ilium as seen on the radiogram), cutting the horizontal line at right angles. The bony nucleus of the head of the femur should be internal to this line. These two lines will show whether the head of the femur is further up or further out than it should be. I have studied this in numerous X rays of normal pelves of children under the age of 4, and I have never seen the bony nucleus of the head of the femur above the horizontal line, although occasionally the vertical line may just cut into it. These two lines enable one to gauge whether a reduction is complete, and also point out the minor degrees of subluxation which are so common.

The purpose of this short communication is to draw attention to the fact that congenital dislocation of the hip-joint is not diagnosed early enough because the general practitioner does not know how to make the diagnosis. I submit that he should be able to diagnose the condition with certainty, by inspection only, if he makes use of the three signs enumerated above—namely, the female profile, the dipping shoulder, and the shortening of the thigh.

DONATIONS AND BEQUESTS.—Among other bequests the late Mr. Edwin Pope, of Mentone Lodge, Dorchester, left £5000 to the Dorset County Hospital, Dorchester, upon trust for investment and to apply the income in some distinctive charitable purpose in connexion with that institution.—Mr. Charles McLaren, of St. Anne's-on-Sea, Lancs, left £500 to the Oldham Royal Infirmary.—The University of Leeds has received a non-recurrent grant of £10,000 from the University Grants Committee to help the University to take in hand, with as little delay as possible, the purchase, extension, and equipment of the new premises for a men's hall of residence.—Mrs. Alice Mary Burnside, of Tollerton Hall, Notts, left £2000 to the Nottingham General Hospital to endow a bed or beds in the names of her husband and herself, £2000 to the Nottingham Children's Hospital for a similar purpose, £1000 to the Nottingham General Dispensary, £500 to the Nottingham and Midland Eye Infirmary, £500 to the Midland Orphanage for Girls, Nottingham, and £500 to the Gordon Memorial Homes for Destitute Boys.

Clinical and Laboratory Notes.

A CASE OF POLYDACTYLISM IN TWINS.

BY H. C. CRAVEN VEITCH, M.R.C.S. ENG.,
HON. SURGEON, HUNTINGDON COUNTY HOSPITAL.

TWINS both exhibiting polydactylism are, I believe, sufficiently rare to justify the report of the following case.

A healthy young woman of 25 gave birth to twin sons at her first labour. Not content with this munificence she had given to each twin six toes on each foot and one well-formed supernumerary finger, whilst one had also the rudiments of a second supernumerary finger.

X ray examination showed the condition to be as follows. A. B., the first twin, had upon his right hand two little fingers. The proximal phalanx was double and fused and from the interphalangeal joint two perfect and separate fingers grew. Each foot had six perfect toes, the little toe in each case being the supernumerary one. On the right side the metatarsal bone was Y-shaped and with each branch of the Y a toe articulated. The left side was slightly different; here the metatarsal was not definitely bifid, but was somewhat stout throughout, and at its distal extremity was expanded rather like the upper end of the manubrium sterni, with a perfect toe articulating with each side of the expansion. Except for the unnatural breadth of the foot the appearance was quite normal unless one counted the digits.

The second twin, B. C., had upon his left hand a supernumerary little finger, of which the bones were all perfect, the proximal phalanx articulating with the mesial side of the head of the fifth metacarpal. This finger was webbed to the first interphalangeal joint and protruded at an angle of 60° to the normal little finger. Upon the right hand, just above the metacarpophalangeal joint, was what looked like a small smooth wart. The mother told me that during the puerperium she noticed a small pedunculated tag of tissue hanging from this and that, thinking it of no importance, she snipped it off with scissors and was rather alarmed when it bled somewhat freely. This I take to be the bud of yet another finger. The feet present precisely the same condition as in A. B., with the exception that the sides are reversed, the Y-shaped metatarsal being on the left side.

The twins are now 20 months old and I have just removed the supernumerary fingers, as it seemed likely that they would be in the way and a nuisance as the children grew older. I am still undecided about the feet. There has been no case of polydactylism in the mother's family, but the father had one brother who was born with a supernumerary thumb. His mother had never heard of any previous case in either her family or that of her husband.

A NOTE ON THE TRENDELENBURG POSITION.

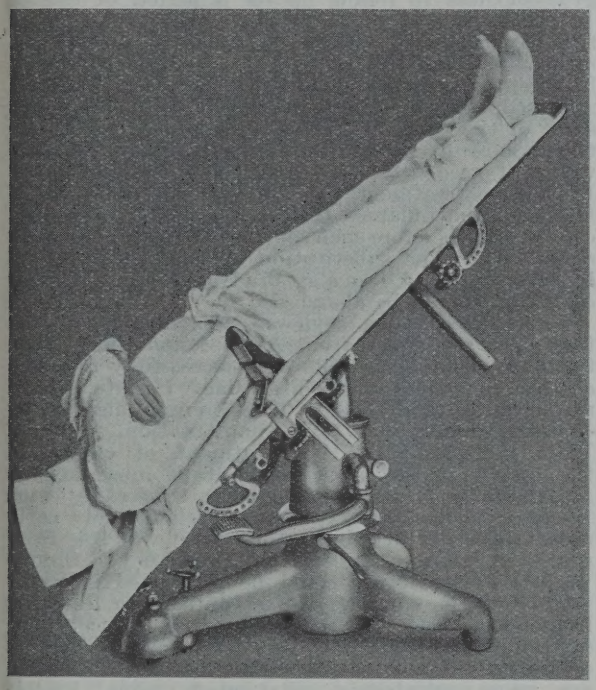
BY R. OGIER WARD, M.CH. OXF., F.R.C.S. ENG.,
ASSISTANT SURGEON, ST. PETER'S HOSPITAL, LONDON.

THE accompanying illustration shows a subject maintained on the operation table in the Trendelenburg position by means of supports which fit against the iliac crests, thus holding the entire weight of the patient by fixing the bony pelvis. It will be noticed that, although the table is tilted to the fullest extent, no shoulder-rests are used, nor are the knees flexed.

On first principles this is clearly the best way to support a patient. But I was led to adopt this method and to design these pelvis supports which were made for me by Messrs. Allen and Hanbury, because I have seen several patients who have suffered from a partial palsy of the ulnar nerves, following operations conducted in the Trendelenburg position. They have all been elderly men operated upon for diseases of the prostate and bladder. The usual sequence of events has been that, on recovery from

the immediate effects of the operation, they have noticed a numbness of the hands and forearm, precisely confined to the distribution of the ulnar nerves. This has in several cases persisted for two or three months, but so far as I know has always ultimately cleared up; there has never been motor palsy, but only numbness and impaired sensation. It is probable that many surgeons and anæsthetists have met with examples of this trouble. The explanation of it is, I believe, as follows.

If shoulder-rests are used, the patient's shoulder-girdle is firmly fixed. When the operation table is tilted the weight of the body forces the upper part of the thorax, which is, of course, conical in form,



Patient in the Trendelenburg position, showing supports.

into the shoulder-girdle. As a result of this, the last cords of the brachial plexus, consisting of the eighth cervical and first dorsal nerves, are compressed against the first ribs and thus may be damaged.

It will be seen that this condition cannot be avoided by placing padding over the shoulders, for if the damage was done by the direct pressure of the shoulder-rests upon the brachial plexus, then the lesion produced would be one affecting the upper cords—namely, the fifth, sixth, and seventh cervical nerves, injury to which would produce a palsy of the Erb type. I do not think that this has ever been recorded, whereas, in my experience, the injury has always been definitely confined to branches of the eighth cervical and first dorsal nerves.

There is a further advantage to be gained by supporting the patient through the bony pelvis—namely, that the respiratory movements of the upper thorax are in no way restricted. And this must surely be very desirable, especially when a very extreme Trendelenburg position is used as, for example, in some gynæcological operations. The patient is thus elevated in order to empty the lower part of the abdomen of its contents and the whole weight of these falls against the diaphragm, with the result that its value as a muscle of respiration is greatly impaired, and the patient has to depend almost entirely upon costal movements. Anything, therefore, that can be done to allow of freedom of thoracic movements is clearly of advantage.

These pelvis supports have now been used at St. Peter's Hospital for more than two and a half years, and are found to be very satisfactory. Admittedly, it is necessary to fit them carefully to each case, but there is no more difficulty in this than there is in the correct adjustment of shoulder-rests. They do not inconvenience the operator in any way, either for midline incisions or for operations in the iliac fossæ. The disposal of the patient's arms requires attention, and if they are placed at the sides, it is necessary to put thick pads of wool underneath the elbow-joints. The supports can be fitted to any operation table of the type illustrated.

A CASE OF "EALES'S DISEASE"

(RECURRENT INTRAOCULAR HÆMORRHAGES).

By Allister M. MacGillivray, M.B., Ch.B. St. And., D.O.M.S.,

SURGEON TO THE DUNDEE EYE INSTITUTION.

Eales's disease, which was first described by Henry Eales in the *Birmingham Medical Review* of 1880, is characterised by the occurrence of hæmorrhages into the retina and vitreous in young adults. These hæmorrhages tend to be recurrent, and the disease is specially prone to attack young male adults, although females are by no means exempt. Both eyes are usually involved sooner or later. In the earlier attacks the hæmorrhages may clear up with restoration of good vision, but the tendency is for permanent defects, or complete loss of sight, to supervene after several occurrences, as a result of the development of dense vitreous opacities, cicatricial bands in the retina and vitreous (retinitis proliferans), and detachment of the retina.

The subjects of Eales's disease frequently suffer from periodic attacks of epistaxis and chronic constipation, but the great peculiarity of the condition is that no definite constitutional cause for it has ever been discovered, the heart, the lungs, the blood-vessels, and the kidneys usually being normal. Various suggestions as to the causation have been put forward by different authorities, but as yet none has proved convincing. It has been ascribed to anomalies in the coagulability of the blood, the coagulation time being either raised or lowered; the action of a tuberculous toxin; myocarditis; enterogenous auto-intoxication; disturbances in the functions of the endocrine glands, &c. Syphilis has definitely been eliminated as a causative factor. The treatment is most unsatisfactory. Laxatives, potassium iodide, calcium lactate, injections of horse-blood serum, and many other methods of treatment have been advocated, but in the majority of cases all efforts in attempting to prevent recurrence of the hæmorrhages have proved useless. A few cases, however, have been reported, where for no apparent reason the hæmorrhages have ceased after varying intervals of time, with the restoration of good vision.

The following is a case of Eales's disease in a young male adult, the only abnormality found being a lowering of the coagulation time of the blood.

A man, aged 28, was first seen by me on May 20th, 1924. He complained of a dense cloud over the left eye which came on suddenly the previous morning. Up to that time the eyes and eyesight were perfect, and there was no history of serious eye troubles in any other member of the family. He was not a "bleeder" and, as far as he knew, none of his family was, or had been, bleeders. The vision of the left eye was reduced to perception of light only. On examination the vitreous was found to be filled with blood, obscuring any view of the fundus. The vision of the right eye was 6/6. This eye was normal in every respect, except for 2 dioptres of simple hypermetropia.

He was referred to his own doctor, who reported that there was nothing in his general condition to account for the hæmorrhage. He was then put on a course of potassium iodide. The hæmorrhage began to clear up, and a month later

the fundus was with difficulty seen, but no abnormality observed. Three weeks later another hæmorrhage occurred, again filling the vitreous and obscuring the fundus. His general condition was once more very carefully investigated and again was reported to be normal, there being no evidence of cardiac disease, tuberculosis, or intestinal auto-intoxication. The coagulation time of the blood was tested and proved to be slightly lowered. With a view to preventing any further recurrences, calcium lactate was substituted for potassium iodide.

The hæmorrhage was very slow in clearing up, and it was not until some six months later that a clear view of the fundus could be obtained. During these six months no recurrence of the hæmorrhage had taken place, but he had suffered from several slight attacks of epistaxis. The vision of the eye was 6/60. On examination a narrow sickle-shaped band of white fibrous tissue was seen arising from, and obscuring, the optic disc. This fibrous band extended towards the macular region and projected for some distance into the vitreous. The macula itself was not involved, the band curving below it to end in a fine point some two discs breadth beyond. Several newly formed blood-vessels were to be seen curling irregularly over the white mass and projecting into the vitreous.

A vitreous hæmorrhage usually becomes completely absorbed, but in certain cases, such as in Eales's disease, organisation takes place. This is due to the action of fibroblasts derived from the only mesoblastic tissue in the retina, that forming and surrounding the central retinal blood-vessels. As a result of this organisation, bands of white fibrous tissue develop, along with adventitious blood-vessels derived from the central retinal system, and the condition is known as retinitis proliferans. These bands project into the vitreous from the region of the optic disc and may be attached at their extremities to the retina. By cicatricial contraction, the bands may drag upon the retina, with the result that the retina becomes detached, causing complete loss of sight.

Two months later another relapse occurred. Injections of hæmoplastin were instituted, but relapses recurred every month until December, 1925, when by focal illumination a large blood-stained detachment of the retina could be made out. The right eye remained normal.

The patient was not seen again until Feb. 8th, 1928, when he was examined at his house. He was in a very melancholic condition and had not been outside his own home for nearly two years. Consequently examination was difficult and his statements inaccurate. As far as could be ascertained there had been deterioration of the vision of the right eye for some time past, culminating in an attack of sudden blindness in the beginning of January. It was impossible accurately to judge his visual capacity, but he was able to make his way about the house slowly by himself, though quite unable to do any reading. On examination two broad bands of white fibrous tissue could be seen arising from, and obscuring, the optic disc and projecting into the vitreous. One of these bands extended nasally, the other temporally, each to terminate in a fine point attached to the retina. The macular region was completely obscured by the temporal band. A few newly formed blood-vessels could be seen coursing irregularly over these white masses, also several patches of recent hæmorrhage.

An interesting feature of the case is that in May, 1926, the patient was admitted to hospital for special investigation as regards his nervous system. He was under the care of Dr. W. E. Foggie, to whom I am indebted for the following notes.

He was found to have retention of touch in the right arm, the right side of the trunk, and the right leg, but analgesia and thermo-anæsthesia over the same area. There was some stiffness and weakness of the left leg. With the knowledge of recurrent intraocular hæmorrhages in the left eye the condition was diagnosed as a hæmorrhage into the spinal cord in the lower cervical region—a hæmatomyelia, with probably some pressure on the pyramidal tracts of the left side. The Wassermann was negative. The electrical reactions of the limbs were normal. The other systems were normal. Blood pressure: 140/105. Blood coagulation time: 75 seconds—i.e., lower than normal. The patient was very nervous and his general outlook gloomy.

The prognosis is grave, the probability being that a detachment of the retina will eventually take place, as in the left eye, owing to cicatricial contraction of the white fibrous bands.

Medical Societies.

MEDICAL SOCIETY OF LONDON.

ADVANCES IN THE TREATMENT OF CANCER OF THE CERVIX.

A MEETING of this Society was held on March 26th, with Mr. H. W. CARSON, the President, in the chair. Opening a discussion on the treatment of cancer of the cervix, Dr. HERBERT SPENCER spoke of the futility of relying on statistical inquiries based on insufficient data, and appealed to younger gynæcologists to follow up for a period of five or 10 years the first 10 or 20 cases they saw, putting full particulars on record, in order to replace the misleading statistics of to-day. No growth should be accepted as cancerous unless it had been examined microscopically by experts in gynæcological pathology; some of the cases of "cancer" recorded might owe their non-recurrence to their non-malignancy. Advance was still needed in the early recognition of cases. Preventive treatment was difficult, but irritation of lacerated and inflamed tissues was likely to produce cancer, and therefore such sources of irritation must be dealt with. The substitution of total for sub-total hysterectomy had been a great advance, and the latter operation should be abandoned.

Dr. Spencer then reviewed the history of the treatment for cancer from Anglo-Saxon times down to 1828, when James Blundell successfully removed a cancerous uterus for the first time. Despite hopeful researches, such as those of Thies on immunisation by cancer-albumin and cancer-implantation, and of Blair Bell on lead, the treatment of cancer of the cervix at present resolved itself into excision or irradiation. High amputation, preferably with Byrne's electro-cautery, was excellent for early cases, especially in elderly women; it was free from risk and allowed subsequent pregnancy. Simple vaginal hysterectomy could be performed in many ways, but the cautery had advantages in lessening hæmorrhage and the frequency of recurrence. The immediate mortality was very low, and the vaginal operation did not interfere with marital intercourse nor cause scar-hernia. Extended vaginal hysterectomy consisted in more extensive removal of the tissues with the help of paravaginal incisions. Its mortality was higher than the simple operation, but had been reduced to 2·7 per cent. by Pehan. It was important that the peritoneum should be carefully closed, as gauze drains might set up adhesions which later produced obstruction. Like the abdominal operation, extended vaginal hysterectomy interfered with marital intercourse. The chief advantage of abdominal operation lay in the removal of infected glands, though it was possible that extensive removal of glands and cellular tissue had disadvantages other than that of increasing the operation risk. Simple abdominal hysterectomy was useful where there were complications or where weakness or advanced age made extended operation inadvisable. Wertheim's operation allowed wide removal of tissue, but had a high mortality and late sequelæ. The mortality-rate had been lowered by gauze drainage, but this favoured hernia of the scar and intestinal obstruction. In about two-thirds of the patients the glands were not cancerous, their removal increased the danger and could never be really complete, and it appeared that cancerous glands could free themselves from cancer, especially with the aid of irradiation. Combined abdominal and vaginal hysterectomy had some advantage in lessening the exposure of the peritoneum and the danger of infection. Treatment could be eclectic, and no one form was suitable for all cases. The most hopeful method for the future was irradiation.

Treatment with Radium.

Dr. MAX CHEVAL (Brussels) said that he used large quantities of radium emitting rays with a wave

length corresponding to a tension of 2,000,000 volts. Slosse and Reding of Brussels had shown that the blood-sugar curve, after ingestion of dextrose fasting, was quite distinct in the sufferer from malignant disease. Her normal blood-sugar was slightly higher than that of the healthy person, and the maximum after taking dextrose would be between 0·25 and 0·26 per cent. occurring one hour instead of half an hour after ingestion and taking two hours to reach the resting level again. The blood-sugar curve retained this "malignant" character after operative cure, but after cure by irradiation, either by X rays or gamma rays, the curve returned to normal. If irradiation had effected improvement but not cure, the degree of return of the blood-sugar curve towards normal was a measure of the improvement effected, and the curve would betray a recurrence before this could be detected clinically. Similar information was given by the acid base level. The pH increased in malignant cases, and the alkalinity might rise to 7·57 in acute cases. After operative cure it remained high; after cure with radium it returned to normal. Exactly similar results had been obtained for the ionised calcium of the blood.

After outlining earlier methods of radium treatment and his reasons for discarding them, Dr. Cheval described his present method.

The apparatus treats two patients at once, placed in bunks, at right angles to each other, with the radium between them. Four grammes of radium element are placed in the centre of a mass of lead in which canals had been drilled to permit emission of radiations upwards and downwards. The element itself lies in a square box, 4 × 4 cm., made of steel and copper, equivalent to 1 mm. of platinum. The radium is thus spread out on a surface of 16 sq. cm. The localisation of the rays is given by the mass of lead, and the rays which are not to reach the patients must pass at least 8 cm. of lead. Above and below the radium is a canal in the shape of a truncated cone with the small opening near the radium and the large end looking towards the patient. The screenage is 1 mm. platinum, 5 cm. aluminium, and 4·5 cm. wood, and the minimum distance between the radium and the skin is 12 cm. The area of skin irradiated is 12 sq. cm.

The results, said Dr. Cheval, were controlled by accurate iometric measurements by Prof. Picard. To treat a deep-seated abdominal growth six areas were successively irradiated, two on the front, two on the back, and one on each side. The resulting area of evenly radiated tissue was a polyhedron equal to a sphere of 22 cm. diameter. The radiation extended far beyond the affected zone and its lymphatics. The effect on a dry skin was slight dermatitis with brown pigmentation and a few vesicles. Nearly all the hair fell out in three or four weeks, but was restored within six months. On a moist skin the reaction would be more acute, but harmless. There were no subcutaneous reactions. Cartilage and bone offered no obstacle to these rays; the gamma rays went through them without causing necrosis. The general effects were never serious. There was usually slight tiredness and occasionally a little diarrhœa or vesical irritation. The urine had been carefully collected and analysed but showed no abnormality, nor had there been any alteration in the composition of the blood even with irradiations as strong as two and a half curies. Thus, the human organism could stand very large amounts of irradiation, up to 480,000 mg. hours of radium element, corresponding to 900,000 mg. hours of radium bromide.

To test the clinical effects daily biopsies had been performed as long as possible, and Dr. Cheval produced microphotographs showing the invasion of tumours by leucocytes and their absorption. The method had only been in use two years, and therefore cures could not yet be claimed, but statistics showed that at least 30 per cent. of all cases treated by irradiation were cured. The new method should raise that figure considerably, and the treatment deserved to be regarded as something more than a palliative for hopeless cases.

Discussion.

Dr. F. J. McCann thought that cancer was a general disease with local manifestations. Patients usually had a period of subnormal health before the growth appeared, and the occasional failure of extensive operation even in early cases convinced him that there was something in the patient which determined cure or disappointment. It was well known that unless a patient's health improved, and especially if she did not gain in weight after the operation, the prognosis was poor. The individual type was important; he had never seen a breast cancer cured in a fat woman, but generally expected success with a thin dried-up one.

Dr. Malcolm Donaldson said that radium was the only treatment worthy of the name for inoperable cancer; its local effect was acknowledged by everybody. The problem of the deeper tissues and glands was being met by X-rays, intra-abdominal radium, and the application of large quantities of radium outside the body as Dr. Cheval had described. The results of radium in operable cases compared with those of surgery were about equal. The disadvantages of surgery were that it took years to learn the technique, and the mortality, even under the most skilful hands, was considerable—15·8 per cent. according to Victor Bonney's figures. Few cases were really suitable for operation, and many patients were deterred from seeking advice by the fear of it. Radiotherapy had the advantages that the initial mortality was negligible; it was suited to nearly every case of carcinoma of the cervix except those with fistula and moribund patients. The technique could be rapidly acquired by any gynæcologist; the time in bed was reduced and the fear of operation lessened. On the other side, there was as yet no scientific evidence that radium dealt with the glands as efficiently as other methods. At St. Bartholomew's the method was to apply about 22 needles, containing 50 mg. of radium element. The thickness of the walls—5 mm. of platinum—filtered the rays. The needles were kept in place by a gauze pad soaked in flavine, and left for 144 hours. To gain the knowledge requisite for judging which form of treatment gave the best results, it was necessary to concentrate on discovering the effect of the rays on the individual cell. Working with tissue cultures at Cambridge, he had found that more damage was done by small doses over a long period than large doses for a short period. Gamma rays had a selective action on all quickly growing tissues; sections of growths after treatment showed rapid swelling and breaking down of the malignant cells, while normal tissue cells remained intact. He had used an intra-abdominal technique which involved packing the whole pelvis with gauze and leaving the radium in place for about a week; there had been a good deal of reaction in his cases, but all ten patients were now alive after two years. He was giving the method another trial without the packing; a patient who had had 40 mg. of radium element in needles, each one sewn to the peritoneum, experienced little reaction, but the method was still on trial. It was a great mistake to talk about cure, and he based his statistics on length of survival. Of operable cases, he had 16 living and had lost 7, of borderline cases 3 were living and 6 had died, and of inoperable cases 48 were living and 112 had died. He had given up the extraperitoneal operation because it was a blunt dissection and led to discharge; it was a mistake to apply radium to damaged tissues. The combination of the Wertheim operation with radium had not been very successful.

Dr. Douglas Webster regretted that the value of distance radium therapy was insufficiently recognised in this country; it had given good results on the Continent not only in gynæcological cancer, but in gastro-intestinal, mediastinal, and cerebral growths. Post-Wertheim X ray treatment had prevented recurrence after three or four years in 50 per cent. of his cases, and showed a much lower operation mortality-rate. According to Meyer, of Tübingen, the pre-operative use of radium reduced the mortality from abdominal sepsis to less than one-half of what it had been; a considerable number of

inoperable cases had been rendered operable within a few months, and the percentage of recurrences had been much lessened.

Dr. S. FORSDIKE remarked that the application of radium to the vagina and uterus could not affect the glands in the iliac region; possibly external application might overcome this difficulty. The technique was not easy, and radium was much misused. Penetration of lymphatic spaces in the growth during the insertion of needles facilitated metastasis.

Dr. G. E. VILVANDRÉ ascribed the superiority of radium over X rays to the much higher voltage equivalents which it represented. If X ray installations could be constructed to give an output of 2,000,000 volts, they might give results even better than those obtained by Dr. Cheval. He thought that an alleged predisposition to cancer was often due to an undiagnosed tumour and a mild carcinomatosis.

Dr. A. GOODWIN said that in many borderline cases where the growth was irremovable the combined method was the best. When it was impossible to perform Wertheim's operation the glands should be removed and all the vessels ligated; the mortality from this procedure was almost nil. The use of radium after this was better than its use alone. He had known needles to be lost in a patient's body, and an elderly patient had died from radium burns and necrosis leading to rupture of the femoral artery, although the dose had been quite moderate.

Dr. SPENCER and Dr. CHEVAL replied.

ROYAL SOCIETY OF MEDICINE.

SECTIONS OF ODONTOLOGY AND ELECTRO-THERAPEUTICS.

A COMBINED meeting of these Sections was held on March 26th under the presidency of Mr. W. RUSHTON (Odontology) to discuss the subject of the

PULPLESS TOOTH.

Mr. FRANK COLEMAN opened the debate from the dental side. He said the pulpless tooth should not be termed a dead tooth, for its periphery—i.e., the cementum — retained some vitality through the periodontal membrane. There was a separate blood-supply and therefore probably also a separate nerve-supply for the pulp of the tooth. When the pulp was anæsthetised by applying a local anæsthetic directly to it, the periphery of the tooth was not rendered anæsthetic, and whereas the pulp could be removed painlessly, the tooth itself could not be extracted without giving pain. On the other hand, by injecting a local anæsthetic around a tooth, painless removal became possible, yet the pulp would retain a measure of sensibility.

The main principles concerned in the treatment of teeth with exposed live pulps or teeth containing dead pulps were: (1) To remove, as far as possible, every trace of pulp tissue. In teeth having live pulps the desensitisation of the pulp must first be assured by means of a local anæsthetic or a caustic. If the latter was used, a few days must be allowed to elapse to bring about complete devitalisation of the tooth pulp. (2) To cleanse the root canal or canals of the tooth and to treat the periapical tissues via these channels. (3) To fill the cavity of the tooth when the periapical tissues had ceased to discharge through the canal of the tooth and had formed a scar at the tooth apex. Most dental surgeons, said Mr. Coleman, recommended the filling of the roots of the tooth as well as the cavity in the crown of the tooth. His own practice was only to fill the cavity in the crown of the tooth—in other words, the pulp-chamber. The periapical tissues could then be further treated if and when necessary, the empty root canal serving as a passive channel down to those tissues. The method by which the implanted portion or root of the tooth was treated before its restoration might have a considerable effect on the after-history. The technique should be carried out under as aseptic conditions as possible. He favoured the use of non-irritating antiseptics in the dry or solid form, such as iodoform, rather than in the liquid state. The tooth cavity should only be filled when the periapical tissues had scarred and so had ceased to discharge; to close the canal or cavity of a tooth before the periapical tissues had ceased to discharge was to court disaster. It had recently been shown that pulpless teeth caused less disturbance to their surroundings when their roots were not filled to their extremities than when they were completely filled. Bulleid regarded the granuloma at the end of the root of a dead tooth as a defensive mechanism, and said that it was more often associated with a partially filled root than with a more completely filled one. The reason why so many untreated dead teeth remained quiescent was that their infected canals lay open to the mouth; hence they could discharge exudative products, which, if pent up, would at some time form an abscess. Mr. Coleman regarded a pulpless tooth as a pathological entity; it should be considered an irritant to the tissues. It was not quite simple to decide whether such a tooth should be extracted. If it was important for mastication, reasonable efforts must be made to preserve it, though in so doing the leading principles of surgery must not be disregarded. Many such teeth eventually caused abscess, and they were invariably somewhat tender on percussion. The abscess might open on to the mucous or cutaneous surface and go on discharging through a sinus. Nature's safety-valve for dead teeth was usually on the gum near the apex of the tooth, or between the tooth and its socket, the discharge in the latter case appearing at the side of the tooth. The least harmful form of untreated dead tooth was probably that with a sinus on the gum or at the side of the tooth and with a pulp chamber open to the mouth; in such case the material formed was probably swallowed and largely destroyed by the intestinal juices. The least harmful form of treated dead tooth was that with a relatively clean root canal. Clinically, these teeth were always a little tender on percussion as compared with normal teeth, also less translucent, often presenting slight gingivitis at the gum margin. The root of a deciduous tooth might be so far absorbed as to render the tooth pulpless, yet it might be retained in this condition for many years without apparent ill-effect, though its retention was to some extent governed by the presence or absence of its successor. In elderly people the tooth pulp might undergo concentric calcification until, finally, the whole pulp chamber and the root canal became filled with a mass of calcified tissue. Even such teeth might not cause ill-effects on their surroundings.

Chronic irritation, such as erosion or attrition, would sometimes lead to a deposition of a protective dentine over the pulp. Some day, perhaps, the dentist would be able to promote and control this process. Mr. Coleman did not feel any leaning towards excising the end of a root involved in periapical destruction. The extent of disease in a root could not be diagnosed, as no line of demarcation was formed between the living and the dead portions of the tooth. It therefore resolved itself into the empirical removal of a certain amount of necrotic root. He regarded as only palliative such processes as the opening and scraping of sinuses connected with dead teeth and the injection of drugs through those sinuses; the cause still remained. Unless a pulpless tooth was completely removed a source of infection was present as great as, if not greater than, the original source of mischief.

Mr. OWEN MORPHY said that probably the pathologist would condemn 95 per cent. of pulpless teeth, but the clinician's verdict would not be so sweeping. He himself inclined to the removal of pulpless teeth, especially when definitely septic, though he realised there were occasions when an attempt to save even a septic tooth should be made—for instance, when the patient was robust and well fortified with natural resistance. The partial denture, especially when made of vulcanite, was a prolific source of oral sepsis,

largely because it did not receive the care needed to make it comparatively innocuous. The pulp of a tooth was infected even when there was but a tiny carious cavity. In preparing cavities, the dentist probably never quite removed the infection by mechanical procedures. There were many patients with many large fillings whose pulps were vital, and in the absence of the dead tooth the pathogenicity of these pulps was ignored. In dealing with an infected tooth, the surgeon was mainly concerned with the organisms in the lumen of the canal and any there might be outside the apex in the periapical space; in the latter position the defensive mechanism of the blood stream was able to act. He was a believer in the value of ionisation for the sterilisation of the parts of the root not accessible to mechanical and chemical measures; the current carried the ion of zinc or iodine through the finest channels at the apex of the tooth. Seldom could a greater current than 2 milliampères be tolerated by the patient, but as the area was so small the concentration was really considerable. By employing the positive pole, Russ had shown that organisms could even be withdrawn from a cavity, quite apart from the lethal action of the ions injected. Weston Price, of America, had clearly shown that it was the tooth which had no defensive granuloma that was the dangerous one, as a granuloma was probably an expression of the patient's resistance. Clyde Davis, in a histological analysis of 100 root-filled teeth, in which the filling stopped short of the apex, found that in all cases where the canals were not infected and caustic drugs had not been used, cementum had grown into the apical foramina and quite occluded them. Where infection had occurred, cementum had grown into the foramina, but the occlusion was not perfect. Instrumentation at the apex should therefore be avoided, so as not to injure the vital cells in the periapical region. Also it seemed advisable to devitalise and remove as little of the pulp as possible. The great difficulty was to prevent reinfection of the scar from the cavity end; in this position Mr. Morphy considered that the solid, non-irritating root-filling was safer than a column of gases. The filling of multiple foramina by artificial means was admittedly impossible. He contended that X rays, by indicating the radiolucent area, gave a line of demarcation for the dentist to take as his guide in doing apicectomy. This operation would fail if the scar was formed in contact with the infected dentine.

Dr. H. M. WORTH said that no intrinsic radiological changes were associated with a dead tooth, but often the appearances in or around it were helpful. Among the certain signs that a tooth was pulpless were the following: the presence of filling material in the root canal or pulp chamber, which material was usually metallic, and showed up well in the skiagram; the presence of osteitis with bone destruction or rarefaction only at the apex of the tooth, with loss of continuity in the lamina dura; the presence of filling involving the pulp chamber; the fact that the pulp chamber and root canals had become completely calcified; the presence of a large cavity extending into the pulp chamber, with no other evidence, warranted the conclusion that the pulp was dead. There were also a number of other indications.

Dr. MURRAY LEVICK spoke of the general raising of the bodily resistance by means of artificial light to the skin. This so stimulated the formation of vitamin D that the patients waged a much more successful combat against their infection. But the case was far otherwise if irradiation were applied to the buccal or other mucous membranes; and certainly the rays should not be applied to the throat. Red and ultra-red rays he had found very efficacious in clearing up infective conditions; they would probably be increasingly used for sepsis in the future. They should not be directed upwards through the palate.

Mr. A. T. PITTS considered that the only place for a pulpless deciduous tooth was the dust-bin; treatment of such he did not regard as legitimate dentistry. It was necessary to differentiate between a tooth devitalised by the dental surgeon and one which was already dead. Treatment should be antiseptic rather than aseptic, asepsis being impossible. The treatment of a pulpless tooth was a dental luxury rather than a dental necessity. Removal of septic teeth was a measure of wisdom. When people had had many teeth filled the question of a mass infection always arose. The treatment of a pulpless tooth should be checked by radiography. Treatment of a pulpless tooth was justifiable if careful selection and patience were exercised.

Dr. MEYRICK JONES reminded the meeting that pathological changes as seen in radiograms were not produced quickly, especially in bone; they were the results of months of morbid change. He did not agree that apical granulations were a sign of immunity. A pulpless tooth, even if it showed no pathological change, might at any time become a secondary focus in a general septic state. If in a young adult a pulpless tooth was left in, there should be a periodical report by the radiologist.

Dr. A. LIVINGSTON did not think it was possible to diagnose the vitality, the pulplessness, or the presence of pulp in a tooth by radiographic means. The contention based on the presence or absence of the lamina dura on the apex of the tooth fell to the ground, for the lamina dura was not continuous. He joined issue with Mr. Coleman in regard to what he said about unfilled canals; he did not regard the method as satisfactory, for in the event of an accident to a tooth so treated, it was unable to resist infection; certainly it could not resist caries. If a tooth was septic, all traces of sepsis must first be removed. Apicectomy was a success, but it must be premised that the case on which it was performed was a chosen one, and that it was carried out with the best technique.

Dr. J. F. BRAILSFORD said that dead organic matter from a dead tooth brought into association with the circulating blood through the dentino-cemental foraminæ was liable, even if sterile when the pulp was extirpated, to be infected by any organism there might be in the blood. It had been shown that, whatever medicament was used in the treatment of infected apices, any dressings left in for 48 hours were infected. Even when great care had been taken, root-filled teeth might be a source of great danger. Weston Price considered that 10 per cent. of the teeth which had septic roots gave no radiographic indication of the fact. He spoke of the various risks of misinterpretation of dental skiagrams, and showed a large number of slides.

Mr. ST. J. STEADMAN, speaking of apicectomy, said his object was not, as Mr. Coleman said, to remove the portion of the root which was dead, but to deal with the last ¼ in., which was the important part. For this operation a large incision was needed, and a flap. He agreed about the importance of carefully choosing the cases for filling. If teeth were chosen for the operation which already had pockets round and the periodontal membrane half-dead, success could not be expected; it was more hopeful in teeth otherwise healthy in the incisor region.

Mr. NORMAN GRELLIER held that a pulpless tooth ought not to be retained; inflammation might exist at the apex of such a tooth without causing symptoms, and it might not be detectable by radiography.

Dr. A. C. JORDAN said he felt considerable sympathy with dental surgeons who tried to save dead teeth. The radiologist should confine his efforts to describing and reporting on what the skiagram showed; he should not attempt to prescribe treatment. He believed attempts to save a pulpless tooth were foredoomed to failure. He hoped dental surgeons would not lose any opportunity coming their way to impress upon patients the importance of a proper dietary.

Dr. G. B. BATTEN agreed that the majority of pulpless teeth, if retained, sooner or later caused trouble, though not all of them. Much depended on the vigour and resistance of the particular person.

The PRESIDENT agreed that it depended very largely on the general health of the individual whether trouble arose from retention of a pulpless tooth.

MEDICO-LEGAL SOCIETY.

A MEETING of this Society was held on March 22nd, with Sir WILLIAM WILLCOX, the President, in the chair.

Dr. GERALD SLOT read a paper on

PAIN IN ITS MEDICO-LEGAL ASPECTS.

He said that pain, like insanity, was very difficult to define. Cicero had regarded it as a disagreeable movement in the body independent of the senses, and Erb's view that every increase of ordinary sensory stimuli was capable of producing pain when it attained a certain intensity had been widely accepted. Dr. Slot then outlined, for the benefit of non-medical members, the anatomy and physiology of the pain mechanism, and referred to the work of Pavlov on conditioned reflexes. From the medico-legal aspect, he continued, pain and the absence of pain were of great importance. It was important to decide whether the pain complained of was real or not, whether it had been caused by the accident, and how great was the extent of incapacity. There was a definite condition of over-reaction to pain—Roussy's "syndrome thalamique"—in which there was intense idiopathic pain with increased peripheral sensitivity. The rules laid down by the law courts seemed to be that if a workman were unfit through existing pain or disease to do the work on which he was engaged, or if he broke down or died in consequence of some event which would not have affected healthy persons, his dependents could claim compensation. Pain which persisted as a result of some condition which might have been cured by more effectual medical skill was regarded as incapacity for which compensation was payable. It was for the employer to establish that the treatment was bad. The same rule seemed to apply to a man who refused an operation for the relief of pain caused by an accident. The onus of proof that pain resulted from an injury was on the claimant, whether the pain was mental or physical. (*Joy* v. *Morton*, 1922). It was not necessary to show that the pain was the natural consequence of the injury or accident so long as the chain of causation was unbroken by any new act. It was in this connexion that medical evidence was of the greatest importance and conflict between medical witnesses most likely to occur. Different conditions associated with pain—e.g., erysipelas, bronchitis from influenza due to debility after the accident (*Thorburn* v. *Bedlington Coal Co.*)—had all been held to constitute good claims for compensation.

Pain Without Obvious Physical Cause.

Since pain might be due to a memory or thought which produced the same effect as an obvious factor, it was very difficult to contest a claim. In *Eaves* v. *Balenclytach Colliery Co.*, 1909, it had been held that incapacity arising from nervous defect or loss of will power produced by an accident did not deprive a workman of his right to compensation. It had been found further that if a man honestly believed that he was incapable of work, as a result of pain or neurasthenia resulting from his accident, he must remain compensated even though evidence could be adduced that employment would facilitate his recovery (*Wall* v. *Steel*, 1915). Brooding over the effects of an accident had been held not to be incapacity within the Act. A very large number of cases of pain in the back had been placed on record.

A strong, active man was riding in a first-class carriage when a slight collision occurred. He was somewhat upset, but was soon able to walk to his business. The next day he felt an acute pain in his back, which ultimately confined him to the house. He was treated and began to improve. The pain was due to a slight rupture of the ligaments in the lumbo-sacral region. Possibly no pain had been noted at the time because there had been no exudation.

As Page had pointed out, it was significant that in hospital tende ness of the back was not a prominent symptom of disease of the spinal cord, whereas in injury and malingering it was often made the outstanding feature of the case. Fear of paralysis might cause an honest exaggeration of the symptoms. In attempting to analyse the pain complained of, the doctor must observe the gait and seize opportunities to stretch the dorsal fascia while the patient was off his guard, as by extending the knees in the sitting position. It was important to know if there had been any constitutional symptoms prior to the accident. Other causes must be considered, such as pre-existing arthritis, spinal curvature, flat-foot, and metatarsalgia.

Collins, Master of the Rolls, had laid down the law in *Lloyd* v. *Sugg* on the matter of the nervous subject. Increased pain, or pain greater than one might reasonably expect, caused by nervous shock, in no way diminished the defendant's liability—e.g., the actual shock and pain resulting from a railway accident might be the same in a nervous, delicate lady as in one of sound health, but the resulting injury would be greater in the former. There was no doubt that the nervous temperament, so increasingly common nowadays, would receive pain impulses in a different manner from the non-nervous type and that the mode of spread would be different also. The medical examiner must realise the fundamental differences in the make-up of human beings. Pain and other disorders, as G. Guinon had stated, arose not so much from the immediate cause as from a state of the nervous system such that the exciting cause was able to provoke in it nervous disorders. Pavlov had separated the psychotic from the hysteric dog on purely physical grounds, and shown that a balance between excitation and inhibition was responsible for some of the responses to external stimuli. Fear, hunger, grief, and pain each played their part in securing a different reflex and altering the stability of the nervous system in experimental animals, in whom there was no question of malingering. Pearce Bailey had well said that the malingerer tended to caricature the disease and the hysteric to copy it. The effects of pain might be far-reaching; the reaction to trigeminal neuralgia might be so intense that suicide resulted. Causalgia was a serious and refractory cause of pain. Referred pain in a finger or toe that had been amputated might be a prominent symptom.

Some Illustrative Cases.

It had been held in *Cooper* v. *The Caledonian Railway*, that a plaintiff who was in a carriage the door of which swung violently back so that he thought there had been a collision, and had suffered alarm, headache, and nervous shock, had a cause of action against the company. Shock necessarily played a part, because it lowered the powers of mental resistance and perhaps increased the ease with which impulses were radiated through the cord.

Practical joking might be a cause of action, as in the case of *Williamson* v. *Downton*, 1897. Defendant told plaintiff that he had been instructed to tell her that her husband had met with a serious accident. The result was a violent shock resulting in pains, headache, vomiting, and many weeks' severe indisposition. It had been held here that though there was no injuria, yet an action had been committed which infringed the legal right to personal safety and had in fact caused physical harm.

In *Steel* v. *Behlan*, 1910, plaintiff, a charwoman, had been wounded by a needle which had become embedded in her hand. An operation for its removal had been followed by a contraction of the deep structures of the palm. Her chief complaint had been pain running up the hand into the left shoulder. Her employers had contended that her condition was due to nervousness in an unreasonable degree and not to any alteration of structure. The judge had been satisfied that she was not malingering, but that her inability to use her hand had induced in her a firm belief that she could not use it owing to the continued presence of the needle. The final judgment had been based on the conclusion that she had been unreasonable in not having exercised or worked her hand in a manner which would have prevented the condition of things which had then existed. Since the award the patient had had an operation for cancer of the breast on the same side as the pain in the arm. This case illustrated three important points: hysterical pain might be present; the patient must conduct her life in such a way as to give her a reasonable chance of improvement; and there might be an organic cause for the pain.

The plaintiff always had the benefit of the doubt, but must show a real desire to return to his employment.

Penal and Criminal Aspects of Pain.

The doctor might be called on to decide whether a prisoner could stand a flogging; any advanced organic disease would be a contra-indication. He might be asked during the punishment if the man's health was likely to suffer from its completion; severe hæmorrhage in the case of a hæmophiliac or signs of physical collapse would be the signal to stop. German jurists had paid much attention to acts performed during acute physical pain. English law recognised that the physical and mental pain of childbirth conduced to a state of mind calling for special treatment if a criminal act were committed. There was such a thing as pain delirium, and certain pains led to a disturbance of consciousness and mentality. Sadists and masochists found their way into the courts from time to time, and must be regarded as insane or as people who should be secluded apart from the general community.

Discussion.

Dr. A. S. WOODWARK said that he had never been able to find a satisfactory answer to the lawyer's question whether pain was or was not present. Any medico-legal statement on pain should be based on three factors: the history should prove clearly that there was pain and that it was due to the accident; the position and distribution of the pain complained of must be consistent with the history; and thirdly, no other cause for the pain must be apparent. Beyond that it was necessary to fall back on the veracity of the witness; if a man said he had a pain nothing could disprove it. Fortunately, it was not for the medical man to give any opinion upon this factor. With our feeble definition of pain and inadequate methods of proving it, all must depend on veracity.

Mr. ZACHARY COPE said that it was impossible to examine a patient properly in the law courts. He could recall many patients who had complained of pain with no apparent cause, but as the weeks and months had gone by some good cause had become apparent. Disease of the cerebrum was one of the commonest causes of pain; mental pain was a very real thing.

Mr. W. G. EARENGEY said that the lawyer's difficulty was not only the veracity of the witness, but also the question of whether a medical man had had sufficient opportunity of studying the case and whether on that account his opinion ought to be accepted. Pain in itself was not ground for compensation; all that a workman was entitled to was compensation for incapacity. In the ordinary common law action for negligence, pain was important because compensation was given in a lump sum and the plaintiff could not sue for an injury appearing later. At one time the law had said that there could be no damages for shock, but later a woman in the street who thought her child had been hurt by a negligently driven vehicle had been allowed damages. Not everybody, however, could recover damages for shock, the reason being that the wrong-doer was only deemed to contemplate the natural consequences of his wrong, and could not be held to believe that everyone in the street was going to suffer shock as the result of his negligence.

BUXTON MEDICAL RESEARCH SOCIETY.

A MEETING of this Society was held in the Devonshire Hospital on March 16th, when Dr. CRIGHTON BRAMWELL gave an address on the

TREATMENT OF AURICULAR FIBRILLATION.

He said that in many cases of circulatory insufficiency, although the heart is known to have been damaged in childhood or early youth as the result of rheumatic infection, and there is a valvular lesion of long standing, the more urgent symptoms which bring the patient to seek medical advice are of comparatively recent origin. The onset of heart failure in such cases is often attributable to an attack of bronchitis or to some special physical effort, and careful inquiry reveals that it coincided with a radical change in the cardiac mechanism—namely, the appearance of auricular fibrillation. In the great majority of cases fibrillation can be recognised without instrumental aid; the persistence of the irregularity when the heart is quickened by exercise or other means is the most reliable guide to its presence. It is in those untreated cases of fibrillation in which the heart-rate is slow that the clinical diagnosis is apt to present difficulty. This combination suggests either a badly damaged myocardium or the presence of some active toxic factor such as dental sepsis. The increased ventricular rate which accompanies fibrillation is by itself sufficient to account for the incidence of heart failure. Many beats are so premature that the ventricles are almost empty at the time of systole; such contractions are unproductive, since little or no blood is expelled from the heart and no pulse-wave reaches the periphery. By suppressing these premature beats the amount of work the heart has to perform is diminished, while the resultant prolongation of diastole improves the coronary circulation, and by allowing sufficient time for the ventricle to fill between the beats tends to abolish the "pulse deficit."

In the treatment of heart failure the first consideration is to curtail the heart's liabilities by reducing metabolism to a minimum. This is achieved by making the patient comfortable, and if necessary giving morphia to abolish restlessness, to relieve dyspnœa, and to ensure sleep. On the credit side of the account the aim should be to increase the cardiac output by slowing the heart with digitalis. In urgent cases massive doses should be given, in accordance with the method suggested by Eggleston, and provided the patient has not previously been taking any drug of the digitalis group, and an interval of six hours is allowed to elapse between successive doses, the method is perfectly safe, being, in the lecturer's opinion, preferable to the use of intravenous strophanthin. When the heart failure is less acute one drachm per diem of the tincture, or the equivalent dose of the infusion or the powdered leaves will meet the case. If toxic symptoms supervene, and this is especially liable to occur when the fibrillation is associated with advanced myocardial disease, the drug should be discontinued for the time being. The most important of such symptoms are nausea, headache, vomiting, oliguria, bigeminal heart action, and certain other less common types of arrhythmia. In this connexion it is important to distinguish the vomiting due to congestion of the gastric mucous membrane from that produced by an overdose of digitalis, and to remember that in febrile patients a heart-rate of 90 or 100 is comparable to one of 60 or 70 in afebrile subjects. Since about 20 minims of the tincture is eliminated from the body in 24 hours, small doses of digitalis may be given over long periods of time without producing cumulative effects. For oral administration strophanthus is less reliable than digitalis on account of the fact that its absorption from the alimentary tract is much more variable, a dose which produces little or no effect in one patient proving toxic for another.

Quinidine differs in its action from digitalis since it actually stops the fibrillation and restores normal rhythm in about 50 per cent. of the cases treated. Unfortunately it is only in a much smaller number that the normal rhythm is maintained, and one of the causes of relapse is the persistence of the toxæmia which originally induced the condition. In a series of temporarily successful cases belonging to the rheumatic group in which Dr. Bramwell had followed up the after-histories, 50 per cent. sooner or later reverted to fibrillation. Similarly when fibrillation is associated with gross myocardial fibrotic changes it is unreasonable to expect the same benefit from quinidine therapy as in those cases where the abnormal rhythm is of recent onset and the myocardium is relatively healthy. On the other hand, in those thyrotoxic cases where fibrillation still persists after the other symptoms have been relieved by a subtotal thyroidectomy, quinidine therapy is seen at its

best. In time the normal rhythm is restored and there is not the same tendency to relapse. It is difficult to assess with certainty the risks of quinidine therapy, for the special catastrophes for which it is blamed—namely, cerebral embolism, and sudden death, resulting from ventricular fibrillation—are liable to occur in any old-standing case of auricular fibrillation even if quinidine has never been used.

EDINBURGH OBSTETRICAL SOCIETY.

Ovulation and the Menstrual Cycle.

A meeting of this Society was held on March 13th, Dr. Haig Ferguson, the President, in the chair. Dr. Wilfred Shaw, after describing the histological changes that occur in the Graafian follicle during the process of ripening, went on to speak of the method used to determine the time relations between ovulation and menstruation. It consisted, he said, in the accurate histological examination of both ovaries of women with normal menstrual cycles. In these cases the dates of the last menstrual period and the day of the cycle when the specimens were obtained were known. It was found that recently ruptured follicles and proliferating corpora lutea could be demonstrated only after the sixteenth day of the cycle—the first day of the menstrual period being taken as the first day of the cycle. Until the thirteenth day of the cycle only retrogressing corpora lutea were found, although in cases corresponding to the post-menstrual phase ripening follicles were also present. The conclusions to be drawn were that ovulation took place between the thirteenth and sixteenth days of the menstrual cycle; that it occurred in healthy women constantly without gross variations in time, and that it occurred rhythmically once a month. Further indirect evidence in support of this view could be obtained by observing the earliest time in the cycle when premenstrual changes appeared in the endometrium, for there was good evidence to show that these premenstrual changes were produced by the corpus luteum. Further ovulation was inhibited by the corpus luteum derived from the follicle which first ruptured, and the rest of the ripening follicles in the ovaries underwent atresia, ultimately giving rise to the interstitial cells. Occasionally—in about 5 per cent. of cases—two follicles ruptured simultaneously, and two corpora lutea were found in the ovaries. If both ova were fertilised binovular twins resulted. Ovulation did not occur before puberty or after the menopause, said Dr. Shaw, for at these times no corpora lutea could be demonstrated in the ovaries. During pregnancy ovulation was inhibited, although ripening of the follicle proceeded normally; again, during lactation there was amenorrhœa because no corpora lutea were produced. If menstruation was regarded as due to the disintegration of a premenstrual endometrium, it could be differentiated from abnormal uterine hæmorrhage, and with this definition it followed that menstruation was invariably preceded by ovulation. Menstruation did not always follow ovulation; examples of this were seen in the case of pregnancy and in the condition described as corpus luteum persistens. Fertilisation probably took place only after the fourteenth day, but coitus might prove fruitful before this time, as spermatozoa might survive in the female generative tract for some time after it. Whether coitus could be fertile after the fourteenth day depended upon the survival-period of the ovum after ovulation, and in human beings there was very little evidence to show what this period was. It seemed, however, that the least fertile part of the cycle was the late premenstrual phase. There was evidence to show that the amenorrhœa met with in advanced stages of diseases such as Graves's disease, diabetes, and dementia præcox was due to an inhibition of ovulation. With large doses of X rays and radium ripening of the follicle was inhibited; with smaller doses ovulation was inhibited.

Reviews and Notices of Books.

Tonic Hardening of the Colon.

By T. Stacey Wilson, M.D., B.Sc., F.R.C.P. London: Humphrey Milford, Oxford University Press. 1927. Pp. 210. 8s. 6d.

In Dr. Wilson's experience the majority of his out-patient dyspeptic cases showed a condition of the colon characterised by tenderness, hardening, and increase of diameter on palpation. He regards the colon as subject to static and contractile muscular activity; when the former is above normal increased contraction is required to overcome the increased resistance. "This increase in the muscular activity of the colon," to use his own words, "would mean an exaggeration of the various reflex phenomena which result from the normal activity of the digestive organs." The symptoms so produced vary from abdominal pain to mental depression and include many diverse conditions. Treatment consists in lessening the abnormal tonic activity by means of intestinal antiseptics and a non-irritating diet, and in reducing the excitability of the reflex nervous mechanism by antispasmodics, especially hyoscyamus. The general health is attended to, and symptomatic treatment given for such troubles as abdominal pain, physical lassitude, and mental inertia. A non-stimulating diet is used if constipation coexists. The results obtained by Dr. Wilson on these lines have been excellent, with the exception of one case which terminated in suicide; but even in this case the author takes the view that with perseverance the illness would have ended in recovery.

Such is Dr. Wilson's thesis and his exposition is interesting, although he hardly makes it clear to the reader that tonic hardening of the colon is the main cause of the symptoms described. He speaks for instance, in one place (p. 33) of an abnormal excess of the stimulant which gives rise to tonic hardening, and in another (p. 36) of a neurasthenic condition, due to one of the less easily recognised causes of nerve strain, as the starting-point of the hardening. Treatment of the underlying condition would be the natural course if such is the case, and Dr. Wilson's own records support this. Many of his cases showed a neurasthenic tendency, and the obvious improvement may have been due to the general rather than the special treatment. This possibility will occur to the mind when faced with the aphorism (p. 192): "In every case of neurasthenia examine the colon for hardness and tenderness. If present, then colon treatment will, in all probability relieve and possibly cure the patient's symptoms." Undue emphasis seems to be laid on tonic hardening where some more important condition is present which may account for the symptoms. Thus a case is described (p. 101) where symptoms disappeared when the colon was treated, but reappeared soon after, the condition finally proving to be one of duodenal ulcer. The author himself comments that an alimentary X ray at the start would have been wiser.

The mode of causation suggested by Dr. Wilson for the tender hard colon is ingenious and well described. The wall of the colon is subject to two opposing types of muscular activity, the one static, the other contractile. Excess of the static function calls for increased activity of the contractile fibres to overcome the increased resistance. This increase in the muscular activity of the colon would mean an exaggeration of the various reflex phenomena which result from the normal activity of the digestive organs. As regards treatment, intestinal antiseptics and antispasmodics are admittedly of value in such cases, but just as the condition of the colic musculature is only one factor, perhaps a minor one, in the general pathological condition, so it seems likely that the author has not fairly estimated the

value of his skilful management of the cases on general lines.

The book is a thoughtful and stimulating production, it contains a capital table of contents, and the format leaves nothing to be desired.

DICTIONARY OF BACTERIOLOGICAL EQUIVALENTS.

French-English, German-English, Italian-English, Spanish-English. By WILLIAM PARTRIDGE, F.I.C., Joint Public Analyst for the County of Dorset and the Boroughs of Poole and Penzance. London: Baillière, Tindall and Cox. 1927. Pp. 141. 10*s*. 6*d*.

THIS book represents an attempt to supply the deficiencies of the ordinary dictionaries in so far as the laboratory worker is concerned. The conception is a good one and it has been ably executed by the author; the result, however, is not quite so satisfying as might have been expected. This is due to the fact that in wrestling with a foreign tongue it is not the words more particularly concerned with the subject which hold up the English reader; it is those in between which present the real difficulty. It is fairly obvious that a "cellule géante" is a giant cell and a shrewd guess may elicit that "conservant le Gram" indicates that an organism is Gram-positive. "Kohlensäure" presents greater difficulties, but even an ordinary dictionary is able to expose the curious gap in a language that has only one word for carbon and coal. While it must be admitted, from a cursory survey of this work, that it contains many words, the meaning of which is fairly clear without recourse to a special dictionary, none the less it is a scholarly effort and will undoubtedly prove of use to those who have no ready access to special dictionaries of the languages in which they are following up a subject.

TWINS AND ORPHANS.

By ALEX. H. WINGFIELD, B.A.Sc., Ph.D. London and Toronto: J. M. Dent and Sons, Ltd. 1928. Pp. 127. 10*s*. 6*d*.

THIS little monograph, a thesis submitted for the degree of Ph.D., is another attempt of a statistical nature to estimate the relative importance of heredity and environment in their effect on mental as distinct from physical well-being. Can racial differences be eliminated by education? Can any system of education create or even increase intelligence, or does it only provide material on which intelligence may play? To what extent are the wide differences in ability due to inheritance or to opportunity and environment? These and other questions will only receive answers when we are able to determine to what extent intelligence is inherited. The data on which the study is based relate to 102 pairs of twins and a shorter series of 29 orphans reared for varying periods under similar environment. The author finds that there is an increasing degree of resemblance in general intelligence among human beings with increase in the degree of genetic relationship among them; in other words, that general intelligence is an inherited trait. No greater degree of resemblance is found in those traits upon which the school concentrates its training than in general intelligence, which is not directly trained at school. Environment is developmental, therefore, not creative. The basic factor in learning being native intelligence, the problem is then to provide for each child a type of education based not so much, or not at all, upon chronological age, but rather upon what his or her native ability demands, and at the same time to retain the advantages, economic and educational, of group instruction. The method of grouping individuals on the basis of *mental* maturity and submitting each group to different school curricula has already been adopted in certain cities, and it will be interesting when comparative results of the two systems of education become available. While the general strength of the arguments contained in the book must be admitted, it is very doubtful if the author's estimation of the effect of environment from the correlation found by random pairing of orphans under similar (or any) environment is of much value. A short account of the cellular basis of heredity and the effect of environment on the inherited bodily structure, together with a full summary of the previous literature on the subject form the opening chapters of a very readable account of an interesting and important study.

A TREATISE ON TUMOURS.

Third edition. By JAMES EWING, A.M., M.D., Sc.D., Professor of Pathology at Cornell University Medical School, New York City; Pathologist to the Memorial Hospital. London and Philadelphia: W. B. Saunders Company. 1928. Pp. 1127. 63*s*.

Prof. Ewing's book is so generally recognised as the standard work on the subject that it is only necessary to chronicle the publication of this, the third edition, and to indicate how it differs from its predecessors. The chapter on tumours of bones has been entirely rewritten on the basis of information obtained largely from the Codman Registry of Bone Sarcoma, and this difficult subject has been considerably clarified. The classification of mammary cancer has been simplified, and the section on brain tumours has been revised. Throughout the book there are many minor alterations and additions, and there are 60 new illustrations. Although the individuality of the author is apparent on every page, the work as a whole deals so exhaustively with the subject that it will scarcely appeal to the student who requires more condensed and dogmatic teaching. But no one who is interested in tumours from anything but the examination point of view can afford to omit Prof. Ewing's book from his library, and one of its most valuable features is that all the references have been verified.

ORIENTAL HERBALS.

The Divine Origin of the Craft of the Herbalist. By Sir ERNEST WALLIS BUDGE, M.A., Litt.D., F.S.A. London: Society of Herbalists. 1928. P. 96. 5*s*.

EVERYTHING written by Sir Wallis Budge is thoroughly interesting, his knowledge being immense and his skill in imparting it being proportional. During the past 40 years a great deal has been found out about the forms and contents of oriental herbals, and this pamphlet introduces us to the oldest oriental herbals from the point of view of the archæologist. The little book is illustrated appositely by reproductions of excerpts from MSS. or tablets in the possession of the British Museum, where Sir Wallis Budge was at one time keeper of the Egyptian and Assyrian antiquities.

THE MICROSCOPY OF DRINKING WATER.

By G. C. WHIPPLE. Fourth edition revised by G. M. FAIR and M. C. WHIPPLE. London: Chapman and Hall. 1927. With 19 coloured and 7 plain plates, 123 text figures. Pp. 586. 35*s*.

THE late Prof. Whipple published the first edition of this book in 1899, and in successive editions it has been a standard authority ever since on the microscopic life (excluding bacteria) of waters with a sanitary interest. It has stimulated inquiry, and so much fresh material has accumulated in recent years that the present edition has been to a large extent rewritten. Algæ are, of course, the most important topic; mechanically and chemically they can deeply vex the sanitary engineer. Protozoa, rotifers, and polyzoa are also dealt with. Part I. (447 pages) takes up the collection and examination of organisms, their environment, the conditions which determine their prevalence, and how they can be kept in check by copper sulphate and other methods; it contains a great mass of interesting information, largely drawn from the personal experience of the authors. In Part II. the common organisms are

classified and described, and many keys are given to help in identification. It is necessarily only a summary, and does not attempt to get beyond genera; ample references are given to the specialised literature which precise work will often need. The illustrative figures are not as good as they should be nowadays; perhaps it will be possible to prepare a new set for the fresh edition into which so admirable a guide will doubtless pass.

JOURNALS.

BRITISH JOURNAL OF OPHTHALMOLOGY.—In the issue for January, 1928, R. R. James gives the result of his historical researches on Roger Bacon, without pretending to be an authority on the subject. He gives quotations showing that Bacon understood the magnifying properties of convex lenses and their practical use for old persons and those with weak eyes. It is interesting that he had to rely on the support of the then Pope against the opposition of his Francisian superiors for getting his writings transcribed.—S. Taylor Harris contributes notes on a case of aneurysm of the anterior cerebral artery causing compression of the optic nerves and chiasma, and E. Wolff suggests an anatomical explanation of the comparative frequency with which the sixth cranial nerve is affected in cases of increased intracranial pressure. Under the dura mater it runs almost vertically up the back of the apex of the petrous temporal bone. It is at the sharp upper border, where it bends forwards almost at a right angle, that it is liable to compression when there is increase of intracranial pressure.—Alex. MacRae, of Newcastle-on-Tyne, describes an operation which he has found very successful for ectropion of the upper lid. At least 40 different methods have been devised for the relief of this condition. The one here described is that of Dr. Webster, ophthalmic surgeon to the American College at Beyrout. Its principles are the division of the tarsal plate from the conjunctival surface, as in Burow's operation, and the insertion into the gap of a graft taken from the inner surface of the lip, without sutures. A similar method, but with sutures, has been described by W. O. Maher.[1] —David Hardie, of Aberdeen, records a case of myasthenia gravis in which the only symptoms were double ptosis and (when the eyes were opened) diplopia. The result of a successful Hess operation on one eye was greatly to relieve the patient's depression without revealing a diplopia which would have troubled him had both eyes been operated on.—J. G. F. Heal records a case of serious hæmorrhage from the conjunctiva of an infant, following excessive instillation of nitrate of silver.

In the February issue Dr. Adalbert Fuchs, of Vienna, writes a second paper on pseudo-glaucoma, the first having appeared in the *American Journal of Ophthalmology* in 1924. He gives notes and coloured illustrations of three cases. The first one was a true glaucomatous excavation of the disc coexisting with a congenital pit of a portion of it, the tension being normal. The other two were cases of congenital malformation of the optic disc simulating glaucoma. The three diagnostic points on which he relies to distinguish false from true glaucomatous discs, where only one eye is affected, are: (1) the larger size of the disc, compared to that of the fellow eye, in pseudo-glaucoma; (2) the veiling of the vessels at the foot of the excavation by semi-transparent neuroglia in pseudo-glaucoma; and (3) the aspect of the halo which in pseudo-glaucoma is irregular and often pigmented. The foregoing has reference to chronic glaucoma. He has also something to say of a case simulating acute glaucoma, but really due to angiectasis of the eyeball.—E. E. Henderson and R. R. James give notes of a peculiar case of glaucoma in an eye with a large physiological cup. This was observed to have become pathological 18 months after being passed as normal, while the tension which previously had been normal became raised. A trephining operation failed to stop the symptoms altogether. The second eye was normal.—Dr. C. D. Verryp, of Leiden, and Dr. K. T. A. Halbertsma, of Delft, record two cases of Parinaud's conjunctivitis, a somewhat rare affection. Bacteriological examination failed to show any causative micro-organism, and they consider it very improbable that the tubercle bacillus should be responsible for the disease.—R. C. Davenport, in a paper giving the after-results of cataract extraction, has analysed the Moorfields cases for the seven years, 1919–1925—642 in all. The end-results were: Vision of 6/12 or better, 68·7 per cent.; 6/60 or better, 19·7 per cent.; failures—i.e., less than 6/60, blind eyes and excisions, 11·9 per cent. It is only fair to say that the notable proportion of failures was accounted for in over half the cases by pre-existing lesions. Of the three types of operation now commonly performed—simple extractions, extractions with peripheral iridectomy, and those with complete iridectomy, the first two produced a higher proportion of good and very good results than the third. On the other hand, the surgeons who still practice complete iridectomy can point to a distinctly lower rate of iris prolapse. On the whole, it is noteworthy that Davenport's analysis shows very similar results to that of Devereux Marshall, who did the same work for the years 1889–1893.[2] The chief differences are the introduction of the modern method of peripheral iridectomy and the much greater frequency with which secondary needling operations are now performed than they were in Marshall's time. Then the percentage of cases was only 26·5. Now it is 62·4. We may add that Davenport's figures do not include a number of cases which were operated on by Barraquer's method during the years 1923 and 1924, and which have been separately analysed.[3]

The March number is largely devoted to M. D. Vernon's paper on the recording of ocular movements (see p. 664).—Dr. J. Wood, of Cape Town, reports a rare case of melanosis of the iris and new formation of a hyaline membrane on its surface. The appearances were so ambiguous that it was deemed safer to excise the eye, but no actual proof of malignancy was revealed by microscopical section.—E. Treacher Collins adds some remarks on the case.—The important report of the Council of British Ophthalmologists on Ophthalmia Neonatorum was commented on in our columns last week (p. 612).

[1] Ophthalmoscope, 1914, xii., 206.

Reports and Analytical Records.

CADBURY'S DAIRY MILK CHOCOLATE.

(MANUFACTURED AT THE GARDEN VILLAGE, BOURNVILLE, ENGLAND.)

WHEN analysed the following results were obtained:—

Moisture	1·00 per cent.
Ash	1·68 ,,
Fat	35·30 ,,
Protein, chiefly casein	7·87 ,,
Cane sugar	39·70 ,,
Milk sugar (lactose hydrate)	9·00 ,,
Other cocoa constituents	5·45 ,,

A consideration of these figures supports the conclusion that this milk chocolate contains at least one-quarter of its weight of milk solids, with their full proportion of fat. There is also present about 40 per cent. of cane sugar, together with sufficient cocoa butter and cocoa to constitute the chocolate as prepared. The additional food value secured by the presence of this high proportion of milk solids will be obvious to those interested in dietetic values, while the smoothness and palatability of the product will appeal to the consumer.

[2] Royal London Ophthalmic Hospital Reports, 1897, xiv., 56.
[3] Trans. Ophthal. Soc. United Kingdom, 1923, xliii., 232.

THE LANCET.

LONDON: SATURDAY, MARCH 31, 1928.

THE NAMES OF BACTERIA.

THOSE whose pleasure or duty it is to read bacteriological literature know very well that they who beget it live up to LINNÆUS's motto "Nulla dies sine linea." And they are beginning to appreciate the truth of another saying of his—"Nomina si nescis perit et cognitio rerum." At the moment there is no doubt that bacteriological nomenclature is in a mess which may be more or less intelligible to those who live in the subject and habitually talk in its jargon, but which is certainly a substantial obstacle to anyone coming in from outside to try to find out what bacteriology has to contribute to general biology (or, indeed, any extraneous subject) and to those medical men whose contact with bacteriological diagnosis is fitful and occasional. For practical purposes the difficult question of the broad classification of bacteria into families and orders and tribes can fortunately be neglected; and attention may be concentrated on genera and species. There is general agreement that LINNÆUS's binomial (perhaps with an extension into a trinomial) system has proved very satisfactory in botany and zoology for the past 150 years, and any attempt to systematise the names of bacteria naturally takes that plan as its model. Thus "*Bacillus typhosus*" is really as familiar as "the typhoid bacillus," and where such names are in common use no one has felt any more difficulty in the bilingual terminology than do the botanists to whom "Durmast Oak" and "Quercus sessiliflora" are interchangeable names. But there are many organisms which have been left stranded so to speak—the pneumococcus, the meningococcus, Gaertner's bacillus, Morgan's bacillus, for example, and no one has dared to lay impious hands on Pasteur's "vibrion septique." To the expert there is no difficulty, but the experts perhaps have not realised as soon as they might that there is nothing to tell the common man that the meningococcus is closely allied to the gonococcus, that Gaertner's bacillus and *Bacillus enteritidis* are the same thing, and that he must recognise the bacillus of gas gangrene as *Bacillus enteritidis sporogenes*, Welch's bacillus, *B. aerogenes capsulatus*, *B. welchii* and *B. perfringens* with a parallel variation in the generic names. Small wonder is it that attempts are being made to get some order and tidiness into this arrangement.

The Society of American Bacteriologists has interested itself in bacteriological classification for some time, and under its auspices two important books have appeared—Prof. R. E. BUCHANAN's "General Systematic Bacteriology" (1925), which deals with the history and definition of genera and larger groups, and the second edition of Dr. D. H. BERGEY's "Manual of Determinative Bacteriology" (1925), which is a catalogue after the manner of the "Systema naturæ." In trying to decide which is the "right" name of an organism, these authors have naturally tried to follow the law of priority which has grown up as a corollary to the Linnean system, and is probably about as good a principle to follow as any other. Some principle, of course, there must be; the choice cannot be left to the individual fancy of each author of a systematic list. The application of the law of priority is at least as difficult in the bacteria as it is in other groups; the older descriptions cannot always be identified with a current organism, and what were species when their first name was given have since become genera. But it is by no means impossible to make sound progress along these lines and there are not many very radical changes in Dr. BERGEY's list: *Micrococcus prodigiosus* becomes *Serratia marcescens*, *B. pyocyaneus* is now *Pseudomonas aeruginosa*, but the alterations which are proposed are fewer than might have been expected. They are not popular among bacteriologists any more than LINNÆUS's most necessary work was looked on with favour by great experimental naturalists like RÉAUMUR, who cared nothing for the identity and names of the animals he observed and experimented with. And in the fervour for systematisation and binomialisation some rather absurd things have been done; we hardly suppose that *Flemingillus* and *Robertsonillus* will ever be adopted as generic names for certain anaerobes even at St. Mary's Hospital and the Lister Institute. The transition from the old muddle to the new order is bound to be slow and to some extent painful. We welcome therefore particularly a reasonable half-way house in the form of a classified list of the more important pathogenic bacteria which appears in the current number of the *Bulletin of Hygiene*, and which gives the binomial and English titles by which the various organisms will in future be known in that publication. This should be very helpful and will, we hope, do something to persuade bacteriologists that a definite, consistent, and coherent nomenclature has become a real necessity. Its fabrication requires a good deal of work and, which is admittedly rare among bacteriologists, a scholarly knowledge of the history of their subject. An interest in the matter would be a very proper activity for the staff of the National Collection of Type Cultures. And in the end, no doubt, if we follow LINNÆUS's advice, we shall, like him, be able to kneel down on the ground and thank God for making the world so beautiful.

To some people such a goal seems impossible because bacteria are so obviously variable and mutable. This is a misconception of the position. Species among the higher animals and plants are no less real groups since we learned of evolution and found that any natural species is a mixture which may be dissected genetically into quite separate forms. Bacterial species appear to be just about as valid; they differ only because their exceptional rate of multiplication runs their time-scale together, and in consequence, in days or weeks we can see things happen which in ordinary animals and plants are spread over years and centuries and æons. Allowing for the time factor, bacteria will prove as amenable as mammals to any sincere attempt to classify and name them.

A JURY UPON NEGLIGENCE.

AFTER a hearing which began on March 13th and ended on March 21st, a special jury found for the defendants in an action brought by Mr. HENRY STROUD, of Sydenham, against Messrs. BATES, BATES and WILSON, medical practitioners, of St. Albans. The case deserves particular attention because in its conduct the difficulty experienced by juries, when deciding what constitutes negligence in a medical case, is well illustrated. The case shows, also, the importance to the patient of an X ray examination in many circumstances where a fracture can be diagnosed, and in all circumstances where it is suspected. The defence societies regard the procedure as an essential weapon for the

rebuttal of charges of malpraxis, and this should be remembered by the members of these bodies.

Mr. STROUD claimed damages for alleged unskilful treatment in attendance after a motor-cycle accident. The defendants denied that they were unskilful; they further pleaded that, if there had been a wrong diagnosis from which the plaintiff had suffered injury, it was due to a refusal on his part to submit himself to an X ray examination until three months after the accident. The plaintiff's case was that he had a motor-cycling accident on March 7th, 1926, in which the upper part of his right femur was fractured. He said that, when first examined by Dr. WILSON (a member of the defendant partnership), he was told that his muscles were bruised and his leg tendons strained, and that he was treated up till some time in June for strain and not for a fracture. Twelve weeks after the accident an X ray photograph was taken; it showed a fracture of the femur, a fracture which had not united. As the result of this delay in treatment, said the plaintiff, he would be a helpless cripple for the rest of his life, his only hope of cure being a serious and dangerous operation (by grafting on to the bone), if he were advised to submit to it. The case for the defendants involved a flat contradiction of parts of the plaintiff's story. Dr. WILSON said that, on his initial examination, he found Mr. STROUD had a dislocated collar-bone, but he saw no evidence of any other serious injury; he advised him, however, to go into hospital on the next day for an X ray examination. Mr. STROUD, according to Dr. WILSON, declined to go into a hospital and insisted on being treated at his lodgings. On making a fuller investigation next day Dr. WILSON found the patient complaining of considerable pain in his legs; there was bruising, discoloration, and swelling in the hips and lower part of the back. He found no crepitus, but was suspicious of several fractures in the neighbourhood of the pelvis, spine, sacrum, and femur. According to Dr. WILSON'S evidence in court, he again advised the plaintiff to go into hospital and have an X ray examination, and the plaintiff again emphatically refused. Without such examination there were no definite signs of a fracture; massage was ordered to remove the pain and stiffness in the back and hip, but massage was subsequently discontinued owing to the pain it caused. Ultimately Dr. WILSON reopened the matter of the X ray examination; Mr. STROUD at last consented and the fracture was thereby discovered. The main issue in the case was whether Dr. WILSON had advised an X ray examination from the beginning. Doctors can only advise; they cannot compel; if a patient declines to follow advice, the doctor can do nothing but suggest the next best course. The finding of the jury for the defendant doctors is to be taken as an acceptance of Dr. WILSON'S statement, or at any rate (since the burden of proof lay on the plaintiff) a refusal to accept Mr. STROUD'S version.

The jury was absent for four hours and to its verdict for the defendants added the following singular rider: "We are of opinion that Dr. WILSON should have protected himself by calling in another doctor and repeating in his presence the advice that Mr. STROUD should go to hospital and submit to Rontgen rays." There is no chance of cross-examining a jury, so we can only speculate upon the meaning of this pronouncement. It cannot mean that Dr. WILSON should have called in a second opinion, for the second doctor was to be called in not to advise the plaintiff, but to hear Dr. WILSON repeat his advice—not for Mr. STROUD'S benefit, but for Dr. WILSON'S protection. Did the jury mean that Dr. WILSON, foreseeing litigation and the conflict of evidence, should prudently have equipped himself with corroboration? If so, why call in a second doctor? Why not a justice of the peace or a commissioner for oaths? The prudent practitioner, it seems, will in future diagnose by affidavit and prescribe by statutory declaration. After a week of harassing anxiety Dr. WILSON succeeded in rebutting the allegation of unskilfulness, but the proceedings have done nothing to contradict Lord Justice SCRUTTON'S dictum (mentioned in our columns last week) that a jury is an unsatisfactory tribunal for determining issues of skill or negligence.

TUBERCULOSIS ON TYNESIDE.

THE latest addition to the series of tracts [1] for the times issued by the Newcastle Bureau of Social Research is devoted to the prevalence of tuberculosis in the towns on the Tyne banks. In this densely populated district, where badly built and overcrowded houses stand on ill-drained clay, where sunshine is obscured by smoke, where unemployment is prevalent and poverty rife, the conditions for the spread of tuberculosis are ideal. Between 1920 and 1925 Gateshead and South Shields had a death-rate from this cause unequalled by that of any of the English county boroughs. The town of Jarrow had a record even worse than that of its larger neighbours. Though the average death-rate (per 1000 of the population) for all forms of tuberculosis in England and Wales during this period had fallen to 1·083, the corresponding figure for the Tyneside industrial towns was 1·599. Jarrow had a death-rate from pulmonary tuberculosis more than twice that of the average for the urban districts of England and Wales. Whilst the death-rate in Newcastle has been halved in the last 40 years, that of Jarrow remains what it was a generation ago. These figures are profoundly disquieting. They are of vital concern not only to the citizens of Tyneside, but to the whole country, for the factors that have produced a high incidence in Jarrow are likely to produce a similar result elsewhere. The cause of the high death-rate in the Tyneside towns has been variously attributed to malnutrition, to poverty, to overcrowding, to the nature of the subsoil. Probably all these factors are concerned, but there is no reason to doubt that here, as elsewhere, a vigorous campaign against tuberculosis would have reduced its incidence and mortality. The pamphlet explains how any scheme to combat the disease must have reference to the tuberculous persons as the source of infection and to the conditions which make for tuberculosis. Chief emphasis is laid on the latter. Thus the two most important points for Tyneside to consider at the present time are the segregation of persons suffering from advanced tuberculosis and the vigorous prosecution of schemes for building new and reconditioning old houses. The Tyneside Papers merit the attention of all who are interested in social questions. The present paper is a model of what a pamphlet of this kind should be. The chief facts of the situation are clearly stated and, despite conditions calculated to rouse indignation, the writing is marked by restraint. The suggestions made for reform are practical and supported by experience obtained in other areas. Sixty years have passed since John Ruskin wrote his letters to dwellers by Weare and Tyne, and the Papers recall the advice of the Victorian prophet. The words may be less eloquent, but the message is the same—that without clear thinking there can be no helpful action, and that even political power is of no avail unless it is directed by knowledge. We may trust that now the Tyneside communities know the facts they will be moved to take concerted action.

[1] Tyneside Papers. No. 11: Tuberculosis on Tyneside. Bureau of Social Research, Newcastle-on-Tyne. February, 1928. 2*d*.

Annotations.

"Ne quid nimis."

DAIRY FARMING IN THE NETHERLANDS AND DENMARK.

In view of the agitation which has been going on for the prohibition of the importation of condensed skimmed milk, the recently issued report[1] of the Commission appointed by the Ministry of Health to inquire into the conditions of production of milk in the Netherlands and Denmark will be widely read by all interested in British dairy farming. The members of the Commission were Dr. J. M. Hamill, a medical officer of the Ministry; Mr. T. A. Hole, a milk inspector of the Ministry; and Prof. J. Mackintosh, of Reading University. The report shows that in the principal dairying provinces of the Netherlands, Friesland and Groningen, the farmers' coöperative movement is very highly developed, and controls its own creameries and factories for the condensing and drying of milk. The actual dairy products turned out vary according to which happens to be the most remunerative at any given time. In the southern provinces, in which the large towns are situated, there are still some private firms who buy milk from the farmers and compete with the farmers' coöperative societies, and owing to the demand for milk in the towns, condensing becomes more of a subsidiary seasonal activity for surplus milk.

The Commissioners were impressed with the excellence of the Dutch cowsheds which, unlike those in England, have been especially designed for dairy cattle. The artificial lighting of the sheds, whether by natural gas or electricity, is particularly good, and considerable attention is given to the grooming of the cattle. There is little manipulation of the milk at the farms and the milking equipment is consequently simple. Within a very short time of production the milk is being pasteurised at the creamery, so that cooling by the farmer is unnecessary and no special milk room is required. The cows are out in the fields from May to November and milked outside during those months. The payment received by the farmer is based upon the fat content of the milk and the results of certain tests, and the requirements for good quality milk appear to be more stringently enforced by the coöperative societies than by private firms. In preparing skimmed condensed milk the cream is first separated, sugar is added, and the mixture is pasteurised at about 90° C. The Commission found that every precaution for cleanliness was adopted at the condensing factories visited. The purity of the milk-supply in the Netherlands is controlled by a Royal decree, dated June, 1925, and the country is divided into 20 districts, each provided with its staff of inspectors and an efficient laboratory with a staff of chemists and bacteriologists. A district laboratory may examine as many as from 20,000 to 30,000 samples of milk in the year. The farmers' coöperative societies also have their organisations for securing satisfactory milk, and the Commission were very favourably impressed with the efficiency attained by these coöperative organisations in controlling the purity of the milk and the health of the cows. The conclusion, as regards the Netherlands, arrived at by the Commission is that the differences which exist in the production of milk and its conversion into dairy products, or in the regulations which control it, and the manner in which they are administered in this country and in the Netherlands are not sufficiently marked to warrant any differentiation on grounds of danger to health between dairy produce made in England and similar produce made in the Netherlands, and that our regulations do not place any significant burden upon the English farmer which is not already borne by the farmer in the Netherlands.

In Denmark the Commission found that the coöperative movement deals with about three-quarters of the total milk produced, but that the coöperative creameries are chiefly occupied in making butter and that the skimmed milk is chiefly used for the feeding of pigs. The manufacture of condensed milk is on a much smaller scale and, as a result, the Netherlands export to us nearly four times as much skimmed condensed milk and nearly five times as much sweetened full-cream condensed milk as Denmark. The general arrangements otherwise found in Denmark were similar to those in Holland. The Danish cowsheds were even superior to the Dutch. In both cases the excellence of the buildings is not due to regulations, but apparently to recognition of the needs of the case. As regards Governmental control of the milk-supply, a distinction is made in Denmark between milk which is to be used as milk and milk which is to be manufactured into milk products. The Commission conclude: "Notwithstanding the relative paucity of regulations dealing with milk intended for manufacturing purposes in Denmark, we do not think that the milk delivered at condenseries in Denmark differs in any notable respect from the average milk produced in England." It will be seen, therefore, that this report affords no justification for any interference with the importation of condensed skimmed milk on the grounds of danger to health or production by unfair competition. The lesson to be learnt from the report is rather that the further development of the coöperative movement in this country would lead both to improvement in the quality of the milk and to better financial results for the farmer.

[1] H.M. Stationery Office. 1928. 6*d*.

EARLY DIAGNOSIS AND CARE OF MEASLES.

As one of our regular correspondents in the United States remarks in another column, the care of measles in young children is attracting close attention there. In a paper[1] read last November before the New York Academy of Medicine Dr. P. M. Stimson states that measles may often be predicted with some confidence before the appearance of Koplik's spots. "Following the onset of fever," he says, "a slight puffiness of the lower eyelids may be noticeable, and there may also be found a fairly definite line of congestion across each lower lid, about at the margin of the tarsal cartilage and perhaps a third of the way from the lid margin to the fornix." He adds that "in ten children in whom I have observed what I thought was a typical measles line of this sort in the eye and have prognosticated the disease at this stage, it subsequently became manifest in eight." The so-called measles line must be quite marked to be suggestive; its duration as a line is generally brief, the injection spreading in a day or so to involve the entire peripheral conjunctiva and later the palpebral conjunctiva; whilst it should be noted that children with catarrhal conditions other than measles may show a linear conjunctivitis just inside the blepharal margin of the lower lid. One would like to know, but Dr. Stimson does not state, the number of cases suffering from other catarrhal conditions in which he looked for a linear congestion, and the number of measles cases quoted is small. But if his observations are confirmed the sign may prove of considerable value in early diagnosis of the disease. In considering the other signs, Dr. Stimson sums up the features of the invasion stage as follows. First comes fever, followed 12 hours later by puffiness of the lower eyelid and perhaps the measles line, together with the first evidence of the exanthem on the fauces. Then in another 12 hours comes catarrh, followed in a further 12 hours by Koplik's spots. Finally, when 36 more hours have elapsed, the rash appears. During the whole invasion period there is a certain amount of headache and malaise. Most observers will find it difficult to agree that it is usual for measles to be so precise in the presentation of its invasion symptoms as this suggests. While-

[1] Jour. Amer. Med. Assoc., March 3rd.

a rise of temperature is usually the first evidence in the invasion stage, it is common enough for catarrhal symptoms to come on at the same time, and they may precede the rise of temperature. Again, Koplik's spots often appear two and three days before the eruption and, in rare cases, may even be the first sign of the disease. The variation is such as to make it of doubtful advantage to set out the symptoms in chronological order. Though strong suspicion may arise in any given case, no definite diagnosis of measles can be made before the appearance of Koplik's spots, unless the so-called measles line proves pathognomonic. As regards management, Dr. Stimson puts forward a plea for the individual isolation of every individual sufferer from measles. In support of it he says that almost innumerable instances can be quoted of otitis media and broncho-pneumonia spreading in a measles ward or through a family group of measles patients. With the individual isolation of all patients at the Willard Parker Hospital, the incidence of secondary infections is said to have dropped very markedly, and with this drop has come a notable fall in the mortality from the disease. The first step towards individual isolation of the patients at this hospital was taken in 1923 to prevent a repetition of the crowding of 1922, when New York City experienced the heaviest measles year of the twentieth century. In further support of his argument Dr. Stimson says that these secondary infections at times seem almost as contagious as the primary measles. Whilst all will agree with him that individual isolation is the ideal mode of dealing with this, or indeed with any important infectious disease, the measure is costly in application. In London there are at the present moment 1500 or more cases of measles in the M.A.B. hospitals. It is not the general experience, moreover, that the complications of measles tend to be almost as infectious as the disease itself. Under adverse conditions patients with broncho-pneumonia are, of course, very apt to infect others in juxta-position, but this does not happen in wards, where the floor-space per patient is sufficient and where there is adequate ventilation by way of the windows. To a great extent the home conditions control the incidence of broncho-pneumonia in measles, and the worse these conditions are the greater the frequency of that complication.

VENTILATION AND HEALTH.

ATTEMPTS to improve the ventilation of buildings have not always been very happy. A case in point [1] is revealed by an American investigation of sickness (especially respiratory) experienced by school-children during the winter of 1926–27. Two groups were chosen. The first consisted of 1232 children attending three recently built, two-storey, plenum-ventilated schools. In this system of ventilation fresh air, after being warmed, is forced into the room by fans through openings 8 or 10 ft. up the wall, and is then drawn out by exhaust fans from near the floor; the radiators warming the air are under thermostatic control. The second group consisted of 794 school-children attending three naturally ventilated, furnace-heated schools, built not less than 40 years ago, with no other source of air-supply than the furnace-ducts and open windows. They represented the crudest type of construction now to be found in the field of school heating and ventilation. Unfortunately no third group, attending open-air schools, was used; but in New York State such schools could hardly be kept open during the winter months. Careful observations were made of the temperature of the rooms in all the schools throughout the period selected, and the data collected, after every possible allowance had been made for differences in the ages and racial origin of the children, showed that those attending the three modern schools had an average absence due to respiratory affections nearly double that of the children at the three old schools. Cases of respiratory disease noted by the teachers among the children who attended school were found to be twice as numerous in the modern as in the old schools. The conclusion drawn from this careful piece of research, which is to be extended, is that a high air flow produced by plenum fans (particularly when combined with high room temperatures) tends to be associated with an excessive incidence of minor respiratory diseases among school-children. Such a conclusion, if correct, is of real value. In this country also there are many different types of heating and ventilation; can we not borrow an idea from the United States and study their influence upon school-children? Judging from the American investigation, the school and not the home is responsible for some at least of the ills discovered among the children by our school medical service, and there seems to be an opportunity here for collaboration between the Board of Education and the expert investigators of the Medical Research Council.

[1] The School Ventilation Studies of the New York Commission on Ventilation. By T. J. Duffield. American School Board Journal, January, 1928. Effects of Mechanical and Natural Ventilation on the Health of School-children. By T. J. Duffield. Journal of the American Society of Heating and Ventilating Engineers, 1928.

MOVEMENTS OF THE EYE IN READING.

A PRINCIPAL part of the March number of the *British Journal of Ophthalmology* is devoted to two articles by M. D. Vernon, of Cambridge, on the methods of recording ocular movements and on movements of the eyes in reading. It was thought at one time that in reading the eyes move backwards and forwards smoothly and continuously, and that perception of the words took place during the movement. It is now known that the eyes move forwards in a series of jerks, and for the last thirty years various observers have investigated the character of these jerks and fixation pauses. The matter is not unconnected with the question of fatigue, and it is satisfactory for readers of THE LANCET to be told that the lines of print least fatiguing to the eye-muscles are those not more than 8·5 cm. in length. As might be expected, the number of fixation pauses varies very much with the individual, his age and ease of reading. The time occupied by the inter-fixation movements is very short compared with that occupied by the fixation pauses; it is the number and duration of the latter which make the difference between a slow and a fast reader. Very slight movements of the eyes also occur during fixation. The eye is never completely at rest, but fluctuates about a central position, moving through an angle of the order of one minute.

A JOURNALISTIC CENTENARY.

ON Feb. 23rd last the *Boston Medical and Surgical Journal* celebrated its centenary, and died, to rise, like the phœnix, as the first number of the *New England Journal of Medicine*, though it may be noted that on the title-page, against the figure "Number 1" are placed the words "Volume 198." This first (or 101st) issue contains the interesting story of the origin and development of the *Boston Medical and Surgical Journal*, illustrated with portraits of John Collins Warren (1778–1856), the founder, and of John Ware (1795–1864), who a little later joined the enterprise—the two had been associated 16 years previously in the issue of a medical journal which had died. A third portrait shows Dr. G. B. Shattuck, who became the editor in 1881, holding the position until 1912, the longest and most successful administration of the journal. There are also pictures of the front covers of the *New England Journal of Medicine and Surgery*, Vol. I., 1812—this is the short-lived predecessor—and of the *Boston Medical and Surgical Journal*, Vol. I. (February, 1828–February, 1829), with its first page, dated Feb. 19th, 1828; other illustrations show the front page of the same journal, Vol. VIII., No. 1, Wednesday, Feb. 13th, 1833, and the front page of Vol. XXXV.,

No. 16, Wednesday, Nov. 18th, 1846, the various specimens showing the changes in style of page and printing. There is also a cover of the *Medical Intelligencer*, Vol. I., 1823–24, the first weekly medical paper ever printed in America conducted by Dr. Jerome V. C. Smith, and published by John Cotton, of Boston, proving that the claim of THE LANCET to be the first medical paper to be issued weekly can be a matter only of days, one way or the other. An informing paper on medical journalism is supplied by Dr. Morris Fishbein, the editor of the *Journal of the American Medical Association*. He gives, with dates, the titles of many medical periodicals published at the beginning of the nineteenth century, and calls attention to the fact that the *Medical Intelligencer* of Boston, founded by Dr. J. V. C. Smith, appeared in the same year as THE LANCET—namely, 1823—but he does not assign priority to either. It is interesting to note that the influence of British journalism was so strong among medical journals for some years that a vigorous move was made to give American character to American publications. A committee was appointed in 1848, presided over by Oliver Wendell Holmes, who the previous year had been elected professor of anatomy and physiology in the University of Harvard, and this body reported that the definite differences in the American constitution and the definite presence in the New World of diseases different from those of the Old World showed that there was a national field for the American scientist to cultivate. How fruitful a field may be gathered from the fact that 30 years later Holmes himself deplored the multiplicity of medical publications in America and elsewhere, while figures supplied by Dr. Fishbein show that the output must be steadily increasing. We welcome the hundredth birthday of our well-known contemporary, whose editorial chair has been filled always by competent journalists, and in whose columns the contributions of many American doctors of international repute have appeared.

INTRACRANIAL HÆMORRHAGE OF THE NEW-BORN.

THE association of asphyxia neonatorum with intracranial hæmorrhage is so firmly established by experience as to be beyond all question. Arising from this association there was at one time an assumption that the hæmorrhage is caused by the asphyxia—an idea put forward by Little in his original paper, and more dogmatically by subsequent observers. No conclusive evidence, clinical or pathological, has been adduced in support of this causal relationship, and of late years the tendency has been to reverse the sequence, and regard neonatal asphyxia as the result of intracranial hæmorrhage, the cause of both being some form of trauma. In Prof. H. Ehrenfest's valuable monograph (1922) this attitude was adopted, with the reservation that asphyxia acts as a predisposing and contributory factor, because engorged veins are more prone to rupture and extravasate blood. A year or two ago Dr. F. R. Ford,[1] whilst expressing his opinion that clinically there is no reason to suppose that asphyxia is an important ætiological factor, pointed out that the question can never be solved on clinical grounds, because of the impossibility of excluding traumatic lesions. In a further investigation,[2] therefore, he has invoked experimental methods, and has attempted to ascertain whether asphyxia per se may leave permanent cerebral damage. For this purpose a number of kittens were asphyxiated by various methods and to varying degrees. In all those which could be resuscitated recovery was complete, and in none of those which died in asphyxia were any definite cerebral lesions to be found; it appeared that the heart-beat was stopped by anoxæmia before any lesion was produced in the brain. Incidentally it may be noted that a comparison of the effects of coal-gas and of pure carbon monoxide suggested that the cerebral lesions which the former produces are due to some unknown poison, and have no relation to carbon monoxide anoxæmia.

Dr. B. P. Burpee,[3] in a recent review of the ætiology and treatment of natal hæmorrhage, adopts a like attitude toward asphyxia, but gives special consideration to the hæmorrhagic diathesis. He has rarely found that the bleeding and coagulation times are increased, and so regards the tendency to hæmorrhage as no more than a contributory factor. He is, however, convinced that intramuscular injection of whole blood is essential in the management of these cases. Dr. Burpee's account of the treatment which should be instituted brings into prominence the divergence of opinion on this question. Besides injection of blood, he advises immediate lumbar puncture. This may be repeated "every 6, 12, or 24 hours according to the symptoms"; its object is to reduce intracranial pressure, and it is done irrespective of whether the fluid obtained is clear or hæmorrhagic. It may be that in this recommendation Dr. Burpee is influenced by his opinion that intracerebral hæmorrhage is rare—an opinion not universally shared. His conviction that the advantages of lumbar puncture greatly outweight the disadvantages, and that reduction of intracranial pressure is always beneficial, are in striking contrast to the conclusions reached by Prof. C. Grulee [4] who contends that removal of fluid and lowering of intracranial pressure are likely to aggravate a hæmorrhage which has not been completely arrested. It is, of course, difficult to ascertain the exact origin of blood obtained by lumbar puncture in the new-born. It may come from a vein in the canal which has been pricked by the needle.

[1] Medicine, 1926, v., 121.
[2] Bulletin of the Johns Hopkins Hospital, February, 1928.

THE COMMONWEALTH FUND.

FEW people in this country have heard of Fargo, North Dakota, but it is the principal subject of the ninth annual report of the Commonwealth Fund.[5] Six years ago it was a prosperous small community, with no unusual health deficiencies, which had never become awake to the need and value of systematic public health service. The functions of its health department were divided between a part-time health officer, a sanitary inspector, a State employee in a State laboratory, a school nurse, and a Red Cross nurse. The Commonwealth Fund chose it as the centre for a demonstration of how municipal health affairs should be conducted. This year Fargo will be served by a full-time health officer, a school dentist, six public health nurses, a director of school health education, a part-time school physician, and two clerical workers. The fundamental purpose of the demonstration was to secure a wider acceptance of maternal and child health services as an essential part of a complete public health programme, and a graph shows vividly the improvement in sanitation, control of infectious disease, and maternal and child health during the years of the demonstration. As a result of the final year's work the children in the five white elementary schools attained 100 per cent. correction of dental defects. Stress was laid on building up and preserving the health of the so-called normal child. The experience of the demonstration appears to point strongly to the conclusion that it is possible to set up, in a relatively short time, an attitude on the part of school teachers which gives health a radically different status in the minds of growing children. The children in turn teach their parents. "When," says the report, "children voluntarily troop to the doctor for long-range protection against communicable disease an attitude of far-reaching importance has been fostered." It must be confessed that to British minds this seems dangerously like a sacrifice of the *mens sana* to the *corpus sanum*. Not that the healthy mind is forgotten

[3] Boston Med. and Surg. Jour., Feb. 2nd.
[4] Haynes's Clinical Pediatrics, 1926, iii., 237, 241.
[5] Address: One East 57th Street, New York.

by the Commonwealth workers. An institute for child guidance has been opened, with a large staff, five of whom are English students. A mental hygiene programme is to be organised in England, and in preparation for this fellowships and observation trips have been arranged for a number of English visitors. The first group of British graduates has now returned to this country and two more annual groups are at work in America. Children accused of every kind of misconduct and delinquency have been received at the Bureau and a large proportion of them have been successfully treated. The information service on child guidance and mental hygiene has answered hundreds of inquiries from all parts of the world, and has published text-books and pamphlets. Educational and legal research and the child welfare work are being continued, and the granting of scholarships in Austria has been extended to workers in strategic positions throughout the country. It will be admitted by all that the satisfactory methods of one country are not necessarily the best for another, and the wisdom of the Commonwealth directors is shown in the fact that no attempt has been made in Austria to introduce American health methods. It will be interesting to see what emerges from the friendly conflict of Commonwealth ideals with British practice when the campaign over here is in full swing.

SANITATION OF THE DEAD.

FOLLOWING a leading article on the disposal of the dead in THE LANCET of Feb. 11th (p. 297), a number of interesting letters have appeared in our correspondence columns. The problem is one which has always confronted mankind, and it is so closely bound up with religious beliefs and social customs, that it is difficult to approach it with a dispassionate mind. Even in an age of comparative hygienic enlightenment the mere suggestion of any interference between the bereaved relatives and their dead would give pain and offence to many. Nevertheless, the methods of the disposal of the dead as carried out in this country are far from satisfactory. Prolonged contact of the dead with the living is bad from every point of view, and it would be of benefit to everyone if at the earliest possible moment after death the corpse could be removed from the dwelling-house to a mortuary or undertaker's parlour. During the subsequent interval which must necessarily elapse before burial or cremation, decomposition could be prevented by the use of a refrigerating plant, or, as is so common in America, by the practice of embalming. Instead of embalming, it has been suggested that sanitation of the corpse should be carried out by the injection of formalin or some other antiseptic solution into the main vessels, but it is a question whether this would be desirable or even effective. There is very little evidence that in this country disease is ever propagated by the presence of a corpse under ordinary conditions, and it is doubtful if the injection of antiseptic solutions into the great vessels would render a corpse bacteriologically sterile. Such an injection would effectively allay the bogy of premature burial, but this fear can be dealt with by other means. And there is the real danger that embalming or antiseptic injections might interfere with a subsequent examination of the body should this be considered necessary. One of the great objections to cremation is the possibility this procedure affords of the concealment of crime, and for this reason special precautions must be taken before any body can be cremated. It is conceivable that injections might have a similar drawback, and for this reason, if for no other, they would have to be rigidly controlled. Unless and until cremation becomes general, anything which tends to delay the corruption of a corpse and its resolution into its constituent elements is to be deprecated. The rapid removal of the body from the dwelling-house to some recognised place would fulfil all requirements, and if this could be combined with a post-mortem examination by an accredited individual, the fear of premature burial would disappear for ever, the concealment of homicide would become more difficult, and medical science would be advanced.

AGE-DISTRIBUTION OF BLINDNESS.

IN a recent annotation on the Welfare of the Blind (March 10th, p. 507) a statement in the Seventh Report of the Advisory Committee was quoted to the effect that 0·5 per cent. of the present blind population —i.e., 258 out of 46,822—are under five years of age, and this statement was regarded as inconsistent with another statement that 17·4 per cent. of the present blind population became blind within the first year of their life. We understand from Dr. F. N. Kay Menzies, medical officer of health for the County of London, that there is actually nothing inconsistent in these two statements. The 17·4 per cent. covers persons of all ages who were born blind or became blind in the first year of life. Assuming that infantile blindness could be wholly prevented for the next five years, while it is true that there would be no persons included in the 0–5 age group, there would, of course, be large numbers of older blind persons who had in the past become blind between the ages of 0–5. It is probably prior to the Ophthalmia Neonatorum Order of 1910 that about one-third of the blind had become blind during the first year of life. Of the 46,822 existing blind persons, 43,340 are over 21 years of age, so that to-day there are living large numbers of blind persons who probably became blind through ophthalmia. This accounts for the apparently high percentage of 17·4 referred to above. It is interesting to note that when the first census of the blind was made in 1919, 21·4 per cent. were recorded as having become blind during the first year of their life.

IDENTIFICATION OF BABIES IN HOSPITAL.

IN most English maternity hospitals the risk of mixing up babies is slight, but some of the larger institutions in the United States have found it necessary to adopt elaborate systems of identification to prevent a confusion, the legal and psychological results of which may be disastrous. Dr. J. B. de Lee, in the *Journal of the American Medical Association* for Jan. 21st, gave an interesting account of the scheme in use in the Chicago Lying-in-Hospital, where 15 babies are sometimes born within eight hours, and where three named Clark have been born on the same day. No single precaution was found trustworthy. In an avalanche like the above, 69 can be read as 96; J. Jones's plaster can get on J. James's back; wrist tapes can fall off or be illegible; the physician may announce the sex wrong or the nurse may make a clerical error. All these and other accidents have often occurred, and the Chicago system, though it may seem irksome, is, according to Dr. de Lee, infallible. The labour ward has a time-book in which are written the names of the parturient and the father. The assisting nurse sets down the times of rupture and delivery, the sex and weight of the child, obstetric particulars, the names of the physician and "scrubbing" nurse, and the number which is to be attached to the baby's navel and wrist. When the baby is born, the cord is tied with a sterile tape bearing an aluminium tag with a number, which the physician calls aloud. Before the cord is cut, the clean nurse ties a tape bearing the same number round the baby's wrist, also speaking the number aloud, and hands a third tape to a bystander to fasten on the mother's wrist. The bystander repeats the number so that all can hear it, and the timekeeper enters it in the time-book. Any disagreement in the original numbers is thus immediately apparent, and the navel-wrist number is associated with the name in the book. A nurse now fills in a form printed on adhesive plaster and fixes it on the child's back; this form has the names, the sex and date of birth of the baby, and the navel-wrist number. At the same time the

office is notified by telephone of the child's sex, the words "son" or "daughter" being used to avoid phonetic confusion, and the hospital entry number is obtained and entered in the time-book and on the history-sheet. Only after this has been done may the child be removed from the labour ward. The child's footprints are now taken, one copy on the mother's labour record and one on a pink sheet which is given to the mother to keep; this sheet also bears, in addition to the other chief particulars, the ubiquitous navel-wrist number, which further appears on the crib-card when the child is sent to the nursery. The mother generally knows her baby before the cord with the navel tag falls off; if she does not, she still has the wrist number and back plaster to help her. The baby goes home wearing these two documents, which are often kept by the mother as souvenirs, together with the navel tag and pink sheet. In case of doubt, the evidence of these records taken together would be sufficient for any jury. Dr. de Lee anxiously invites criticism, but we do not think many readers will be able to find a loophole in his organisation.

IODINE DEFICIENCY AND GOITRE.

MUCH scientific war has been waged around the problem of endemic goitre, and at least six theories have been put forward to account for its occurrence. Prof. D. W. Carmalt-Jones's paper before the Section of Medicine of the Royal Society of Medicine on Tuesday last was a lucid and convincing account of the work in New Zealand, where, as he said, the first thing that strikes the eye of a stranger in the street is the preponderance of goitres. It has been stated that Maoris do not suffer from the complaint, but although this is true of the coastal Maoris, those who have been driven inland have had in their language a word for goitre as long as tradition goes back. In a recent survey of 300 of them, 18 per cent. were found to have enlarged thyroids. The prevalence amongst Europeans has been noticed since 1888, and 1500 men were refused for the Army out of some 130,000 examined when conscription came in during the war. Whatever the environmental factor may be, it does not act uniformly all over the islands, for the incidence among schoolchildren is 16 per cent. in Auckland and 28 per cent. in Wellington, rising to 56 per cent. around Canterbury. With a selective regional incidence like this research workers had something to go on. Fæcal contamination in the drinking-water was excluded by the fact that Christchurch has quite as good a standard of water-supply as Auckland; radio-activity of the water from artesian wells was put out of court by the fact that the incidence was 60 per cent. in an area where the water runs freely in the open. The incidence was high in places where the water-supply was entirely taken from the roofs, and lowest of all in a limestone district, so the suggestion that salts in the water had some ætiological significance could be disregarded. Diet is strikingly uniform all over the country, said Dr. Carmalt-Jones, and could not be held responsible for a condition with such variations in degree. Geological considerations put forward in Europe could not now hold for New Zealand, but as soon as Hercus examined samples of the soil of the different districts for iodine-content, a striking parallelism between low soil iodine and high goitre-rate was manifest. The preventive treatment, therefore, was to add iodine to the food, and early failures in this direction had been found to be due to overdosage. The amount required was minute, four parts per million being the proportion allowed by the Health Department. The problem of toxic goitre, Dr. Carmalt-Jones pointed out, is much more complicated, and an overdose of iodide in simple goitre may well produce serious toxic symptoms. In the subsequent discussion Dr. Scott Williamson said that the endemic goitre of India is quite certainly not the endemic goitre of New Zealand. McCarrison had found an abundance of iodine in the soil and the vegetable food, and his work was as convincing as that of the New Zealand workers. Dutch investigators have made the interesting observation that those who are susceptible to toxic goitre in Holland are all immigrants, in the third generation, from Switzerland, whose ancestors were liable to simple goitre. Ancestral predisposition possibly plays a part in causing the condition, and, as Dr. Williamson said, there seems little doubt that simple goitre can arise from a number of causes. It may be that there are two quite different types, with different ætiology and different pathology. It is by careful work of the kind done in New Zealand that we shall reach more definite conclusions.

WE report elsewhere in this issue that the Senate of the University of London has appointed a committee to consider the situation arising out of the decision of certain London hospitals not to admit any more women students.

Dr. W. W. Jameson, medical officer of health and school medical officer for Hornsey, has been appointed to the University Chair of Public Health, tenable at the London School of Hygiene and Tropical Medicine. A report of the appointment appears in our news columns (p. 679).

THE death has occurred in Glasgow of Dr. George Stevenson Middleton, consulting physician to the Royal Hospital for Sick Children and the Royal Infirmary. Dr. Middleton, who was 75 years of age, was at one time President of the Association of Physicians of Great Britian and Ireland.

A DESCRIPTIVE account and catalogue of the exhibits in the Home Office Industrial Museum has been issued by H.M. Stationery Office (price 3*s.* 6*d.*). The Museum, which was opened in December last by the King and Queen, has the primary object of informing all who are connected with industry in the latest and best methods of promoting the safety and health of workers; it also affords in a compact and convenient form an object-lesson to medical practitioners and students of the medical side of industrial problems. The Museum has been well visited by many classes of inquirers since it was opened three months ago, and the handbook will serve as a guide to a well-spent visit, while many visitors will find it useful to refresh their memory from it with a view to paying further visits with more instructed minds. The promoters of the Museum intend to keep in touch with the authorities of similar museums abroad, using the interchange of information and ideas to make for progress in industrial hygiene on an international basis.

THE National Association for the Prevention of Tuberculosis has issued a fifth edition of its Handbook of Tuberculosis Schemes for Great Britain and Ireland. This useful compilation is in effect a tuberculosis directory of the various administrative areas in so far as mortality from tuberculosis and provision for its control and treatment are concerned. The information is obtained from trustworthy sources and has been brought carefully up to date. In the present edition data for the Channel Islands are included and the addresses of care committees and of health departments are given. Unfortunately, in many cases there is still no care committee to give an address of. Included in the Handbook are a couple of striking graphs giving the death-rates from tuberculosis in the year 1926 for the various administrative counties, from which the reader can at a glance pick out those in which effort has been apparently less successful. The Handbook will, we may trust, serve a purpose in exciting rivalry between county areas for a good place on these graphs. The price of the handbook is 7*s.* 6*d.* post free from the Association, whose address is for the present, 1, Gordon-square, London, W.C.1.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CCLXIX.—THE TREATMENT OF THE SEQUELS OF HEAD INJURY.

IT is not within the scope of this article to treat of all the manifold disorders that may follow injury to the head—conditions as divergent as the rare traumatic diabetes insipidus and the common facial palsy. Attention will therefore be confined to the more common sequels, and to those whose treatment may become a matter of urgency, even at a time remote from the day of injury.

Persistent Cerebral Contusion.

A rational treatment of persistent cerebral contusion can be based only upon a knowledge of its pathology, which we owe largely to Trotter.

Owing to the rigidity of the cranium the volume of the intracranial contents is constant. A limited swelling of the brain can be accommodated at the expense of the cerebrospinal fluid, but any further increase in size must lead to compression of neighbouring veins and capillaries. A localised cerebral contusion, such as is produced by a blow or a fall upon the head, is characterised by small hæmorrhages and extravasation of blood plasma from damaged vessels. In any other part of the body these products of injury would quickly be removed by way of the blood-vessels and lymphatics. Owing, however, to the unique position of the brain within the rigid skull, the œdema impedes the circulation in its neighbourhood and so prevents its own absorption. Consequently, the contusion may persist unchanged for months or years, giving rise to distressing symptoms of which the most prominent are paroxysmal headaches, often of great severity, attacks of giddiness, and mental disturbances, such as irritability, nervousness, and inability to concentrate. Treatment in such cases is directed to breaking the vicious circle upon which the persistence of the contusion depends and so permitting the absorption of the exudate.

Many cases of persistent cerebral contusion can be prevented if the injury, however slight, is adequately treated in the acute stage.* Treatment of the late cases is based upon the same principles. Rest in bed is the first essential and the patient should be forbidden to get up for any purpose. Sometimes the headaches, which are apt to be most severe in the early morning, can be prevented by the patient's learning to sleep sitting up with his head and shoulders supported upon pillows. Hypertonic saline solution is administered, preferably intravenously, the dose being 70 c.cm. of 15 per cent. sodium chloride solution, slowly injected. Several such injections may be given at intervals of four or five days if necessary. Alternatively, six ounces of a 25 per cent. solution of magnesium sulphate may be administered by the mouth or by the rectum once or twice a day, the patient's intake of fluids being restricted meanwhile; but in our experience the intravenous route is the most effective. The usual analgesic drugs may of course be used in addition, if necessary, for the relief of headache.

Cases of persistent cerebral contusion which fail to respond to treatment with hypertonic solutions require surgical interference. Inasmuch as there are usually no localising signs and the object of operation is to relieve a rise of intracranial pressure rather than to deal directly with a focal lesion, the operation of choice is a right subtemporal decompression. In the event of focal symptoms being present it is wise to do the subtemporal decompression on the affected side. If it is thought advisable to inspect the site of contusion an osteoplastic flap may be combined with the subtemporal decompression.

A new method of treatment for persistent cerebral contusion has recently been introduced by Wilder Penfield.[1] In a case presenting the classic symptoms of persistent cerebral contusion Penfield introduced air into the subarachnoid space in the lumbar region for the purpose of diagnostic radiographic studies. He found to his surprise that within a few days the patient was completely relieved of symptoms, and these did not recur in the ensuing five years. Subsequently he treated six other cases by injecting air in amounts up to 100 c.cm., with remarkable success. The air floats to the uppermost part of the subarachnoid space and can thus be manipulated, by arranging the position of the head, to the region where the headache is most intense. In this region pneumograms have frequently shown subarachnoid or subdural cystic collections. The explanation of the relief of the headaches is not yet clear, but the method appears to open up an important field in the pathology and treatment of post-traumatic headaches. The reader is referred to Penfield's paper for the technique of lumbar insufflation. We would point out that the method is still in its infancy and that it should only be used after most careful consideration and with all the precautions that a major surgical operation demands.

Traumatic Neurasthenia following Head Injuries.

By traumatic neurasthenia we understand a state of anxiety neurosis which occurs in the absence of, or outlasts recovery from, an organic lesion produced by an accident. It is especially prone to follow injuries of the head since the potential seriousness of head injury is well known to the laity. It rarely occurs if the injury be so severe that its disabling effect is undeniable and, as Buzzard says, it hardly ever develops unless the patient is able to fix the responsibility for his accident upon someone else. This statement, however, is liable to misinterpretation unless it is further analysed.

The treatment of traumatic neurasthenia depends entirely upon a sympathetic understanding of its ætiology. In order to make this clear it will be helpful to trace the development of the condition in the imaginary case of a head injury sustained by a workman in the course of his employment.

A labourer while at work is struck on the head by a falling object and sustains a moderately severe concussion from which in other circumstances he would have recovered in a few days. On receiving his injury he is taken to hospital, where he is told by the doctor that he has had a narrow escape from a fractured skull. From his friends, who comment on his ill appearance, he learns that his accident was due to the carelessness of a fellow workman. His employers acknowledge their responsibility to the extent of allowing him half-pay. As a wise precaution against sequelæ he is kept in bed for three weeks and on getting up he naturally feels weak. He now begins to fear that he will not be well enough to return to work for some time. In view of his family responsibilities this excites in him a natural anxiety which intensifies his feelings of weakness. On returning home he feels somewhat better, but owing to lack of exercise he is out of training for heavy manual work. He inquires if his firm can give him a light job and is told that this is impossible and that he must wait till he is quite well before resuming work. This intensifies his anxiety, for he fears that if he returns to work and breaks down he will have sacrificed his half-pay and his earnings will cease. If, on the other hand, he remains at home indefinitely he knows that sooner or later his compensation will come to an end. He has by this time developed a definite anxiety neurosis as a direct result of the situation in which he finds himself. It is unnecessary to trace the familiar story further in detail. Ultimately the man is medically examined on behalf of his employer and usually he is pronounced fit for work, and his compensation is withdrawn. He now embarks on litigation which further harasses him, threatening

* The treatment of head injuries in the acute stage was described in THE LANCET of March 17th and 24th.

[1] Penfield, Wilder: Surgery, Gynecology, and Obstetrics, December, 1927, p. 747; see also THE LANCET, 1927, ii., 1401.

increased expense if it fails and rendering any retreat from his claim morally impossible. Finally his case is decided and, strangely enough to the superficial observer, whether he wins or loses his suit he speedily recovers from his neurosis, thereby confirming the cynic in his opinion that traumatic neurasthenia is merely a mercenary form of malingering. This, however, is an unjustifiable conclusion. The decision of the case cuts the Gordian knot by throwing the patient back upon his own responsibility. He has no longer anything to lose by partial recovery, which therefore ceases to be in itself a source of anxiety to him, and he rapidly recovers completely.

It is evident that traumatic neurasthenia is in its later stages, especially when complicated by litigation, temporarily incurable. It is, however, eminently preventable and, when it first develops, quite amenable to treatment. In dealing with industrial accidents and accidents involving possible claims for compensation every care must be taken, consistent with adequate treatment of organic lesions, to avoid suggesting incapacity to the patient. As soon as he gets up his symptoms must be explained to him and if there is no organic lesion present he must be told that any weakness or giddiness he may feel are the natural results of confinement to bed and will soon pass off. Positive suggestions of speedy recovery must be made. At the earliest possible moment physical exercises should be begun for the double purpose of restoring the patient's capacity for manual labour and inducing a feeling of well-being, one of the most powerful psychological aids to recovery. Lastly, an early attempt should be made to obtain the sympathetic coöperation of the employer or foreman, who can do much to remove the fear of a breakdown following a resumption of work. Many cases of traumatic neurasthenia would never develop if the employer and workman could be made to see that their interests are identical and not, as they are too often from the first assumed to be, mutually antagonistic. Unfortunately, the doctor can do nothing to remove the ultimate source of anxiety, an industrial situation in which "light jobs" are almost unobtainable and the penalties of incapacity so severe.

The problem of dealing with traumatic neurasthenia following head injury is complicated by the fact that persistent cerebral contusion is an organic lesion of the brain produced by trauma, which is usually associated with no abnormal physical signs. Since this condition may cause definite symptoms of anxiety it may easily be diagnosed mistakenly as neurasthenia. It is important, therefore, to exclude persistent cerebral contusion before attributing symptoms following head injury to a neurosis.

As in other states of neurosis, the bromides are of value for the relief of symptoms in traumatic neurasthenia.

Traumatic Epilepsy.

Epileptiform convulsions following head injury may be either generalised or Jacksonian in character. Statistics derived from gunshot wounds of the head during the late war have shown that the proportion of cases developing epilepsy as a sequel is about 5 per cent., a figure which is remarkably constant in all countries. This fact suggests that the fits are not the result solely of the injury, but are probably the outcome of a predisposition to epilepsy, the trauma being only the precipitating cause—a point of importance in relation to treatment. The routine treatment of traumatic epilepsy should be medical, and conducted on the same lines as in the "idiopathic" disease. It is well to begin with potassium or sodium bromide, grs. 10 t.d.s., and to add luminal or luminal sodium, gr. ½ to gr. 1 t.d.s., if the fits are not controlled by bromides.

Operation should be considered in cases which fail to respond to medical treatment after a few months, for if it is to be undertaken it must not be delayed too long. If the presence of a focal lesion is indicated by the history, by radiographic signs, or by the focal character of the fits, exploration may be made at the appropriate site. In some cases benefit has followed excision of, or injection of alcohol into, a localised area of cortex. In view, however, of the probable presence of a constitutional factor in these cases too much must not be expected of such operations.

Subdural Hæmatoma.

There is a curious condition in which blood accumulates beneath or within the dura and only gives rise to symptoms weeks or even months after the initial injury. The blood is for the most part in form of clot and is enveloped in a distinct membrane. It forms a solid mass on the convexity of one or both hemispheres. The condition is frequently mistaken for intracranial tumour, for the initial injury may have been slight and the symptoms are those of slowly increasing intracranial pressure, including papill-œdema, with slight and variable focal signs. The clot should be removed by operation, and particular care must be taken to leave the field of operation dry, for post-operative hæmatoma is very liable to occur. The condition is so frequently bilateral that when once hæmatoma is disclosed over one cerebral hemisphere an exploratory puncture should be made on the other side and at the same operation for, as Trotter has shown, there is danger in delay.

Cystic collections of blood and cerebro-spinal fluid occasionally form beneath the dura as a result of injury and give rise to symptoms like those of subdural hæmatoma. They are treated in the same way.

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INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED MARCH 17TH, 1928.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 359 (last week 347); scarlet fever, 1607; diphtheria, 1205; enteric fever, 33; pneumonia, 1590; puerperal fever, 42; puerperal pyrexia, 115; cerebro-spinal fever, 11; acute poliomyelitis, 10; encephalitis lethargica, 22; dysentery, 9; ophthalmia neonatorum, 117. No case of cholera, plague, or typhus fever was notified during the week.

The cases of small-pox were notified from the following 20 counties:—London, 10 (Paddington 2, Wandsworth 8); Berks, 1; Derby, 15; Durham, 61; Lancaster, 21; Leicester, 1; Lincoln, Parts of Lindsey, 9; Middlesex, 11 (all except 1 from Heston and Isleworth); Norfolk, 1; Northumberland, 18; Nottingham, 18; Somerset, 2 (Bridgwater, Taunton); Stafford, 21; Suffolk West, 1; Warwick, 16; Yorks, North Riding, 4; West Riding, 90; Brecknock, 5; Glamorgan, 28; Monmouth, 26.

The number of patients in the Infectious Hospitals of the Metropolitan Asylums Board on March 20th-21st was as follows:—Small-pox, 8 (one of them being under observation); scarlet fever, 1596; diphtheria, 2508; enteric fever, 32; measles, 1523; whooping-cough, 143; puerperal fever, 10 (plus 7 babies); encephalitis lethargica, 70; "other diseases," 37. At St. Margaret's Hospital there were 13 cases of marasmus and 14 babies (plus 7 mothers) with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns, including London, there was no death from small-pox, 2 (1) from enteric fever, 172 (97) from measles, 9 (2) from scarlet fever, 43 (11) from whooping-cough, 43 (9) from diphtheria, 54 (11) from diarrhœa and enteritis under two years, and 100 (15) from influenza. The figures in parentheses are those for London itself. The death from enteric fever outside London was reported from Birmingham. Of the 75 fatal cases of measles outside London, 13 were reported from Sheffield, 11 from Tottenham, 7 from Plymouth, 6 each from Bristol and Worcester, 5 from Manchester; while the figure in Glasgow for the same week was 14 (Dublin not reported). The number of stillbirths registered during the week was 301 in the great towns, including 61 in London.

Special Articles.

IMMUNITY AND VITAMIN DEFICIENCY.

A REVIEW OF THE EVIDENCE.

THE idea that the immunity of the body is lowered by dietary deficiency is a very attractive one, and it is remarkable how little experimental evidence there is in support of it. In a paper read before the British Association at Leeds last year and published in our columns, W. Cramer [1] drew attention to the relation of national health to milk production and milk fat consumption. He referred to the best-known example of infection related to dietary deficiency, which is familiar to every dietetic worker who has dealt with rats—i.e., the occurrence of an acute or chronic lung disease in rats, which is associated with a deficiency of the antixerophthalmic vitamin, vitamin A. Lack of this vitamin seems to lead to a breakdown of the mucous membrane, by which, according to S. B. Wolbach and P. R. Howe,[2] a stratified keratinising epithelium is substituted for the normal one. The epithelium may then become infected at many points in both old and young rats. I. G. Macy and co-workers[3] noted otitis media, mastoid disease, and sublingual abscesses, besides the usual lung disease, and H. C. Sherman and F. L. McLeod[4] were extremely struck with the liability to broncho-pneumonia, induced in rats by a deficiency of vitamin A; they argued from the rat to the human being.

Effects of Dietetic Deficiency in Human Infants.

It remained for C. E. Bloch,[5] of Copenhagen, to trace the same condition in human infants. In his studies on children suffering from xerophthalmia, as a result of a diet deficient in vitamin A, he noted the liability of such children to catarrhal infections of the mucous membranes, particularly of the respiratory organs, and to infections of the urinary tract, with *Bacillus coli*. So serious were these infections that the child died if the diet were not changed. Olaf Blegvad [6] gives a set of these cases, in which, out of 60 fatal ones, where the cause of death was known, 46 were due to broncho-pneumonia. The dietary conditions studied in Denmark were, of course, extreme. It is hard to believe that broncho-pneumonia of infants can ordinarily be associated with a lack of vitamin A, but a mild degree of insufficiency might exist and manifest itself in no other way than by a lowering of immunity.

The Antirachitic Vitamin.

When we turn to the antirachitic vitamin we are on less sure ground. The Report to the Medical Research Council on Rickets in Vienna [7] (1923) records that respiratory infections, otorrhœa, and furunculosis were less common in a group of children receiving energetic antirachitic treatment than in a comparable group which were not receiving it, but the antirachitic treatment consisted chiefly in the administration of cod-liver oil, which is rich in vitamin A as well as in vitamin D, so that it is not possible to say which vitamin was responsible for the improved condition. W. Eichholz and H. Kreitmair [8] have lately investigated the effect of diets, rich and poor in vitamin D (irradiated ergosterol), on adult rats and mice. In a series of rats a spontaneous epidemic of paratyphoid occurred among the animals without vitamin D, while those receiving it were spared, but it was never found possible to repeat this observation. It was found that mortality from inoculation with a virulent strain of pneumococcus was decreased by administration of vitamin D and still further decreased when vitamin B, in yeast, was added as well. It is suggested that even among adult human beings vitamin D may have a beneficial effect in raising resistance in the winter when sunshine is scanty. The effect of vitamin D upon immunity is not regarded as a specific one, but one which is common to any form of dietary deficiency.

Inconclusive Experiments.

Every bit of human experience in the matter goes to show that lack of vitamin D facilitates the development of tuberculosis and that administration of vitamin D, as cod-liver oil, or provision for the body, of the opportunity to form vitamin D itself, by exposure to ultra-violet light from the sun or an artificial source cures it after it has developed. There is, however, remarkably little experimental confirmation of this. A leading article in the *Journal of the American Medical Association* (Feb. 4th, 1928) quotes investigations by Agnes H. Grant and co-workers,[9] who have induced tuberculosis in the otherwise very resistant albino rat by feeding it on a rachitic diet. They do not appear to have been troubled by inconsistency in their results, but S. S. Zilva and H. Schütze,[10] who carried out experiments of a similar type, found it very difficult to arrive at any clear-cut conclusion. In their summary they state that they found some evidence for saying that "a large excess of fat-soluble vitamins in the diet, as supplied by cod-liver oil, inhibits the formation in rats of these tuberculous tumours, but such evidence was by no means conclusive." They also found that the inclusion of large amounts of cod-liver oil in the diets of rats, or ultra-violet irradiation of the rats, produced a slight, but constant, leucocytosis. S. S. Zilva [11] had also previously investigated the influence of deficient nutrition, on the production of agglutinins, complement, and amboceptor. He used rats and guinea-pigs and studied deficiencies of the elements, Ca, Fe, K, Cl, P, and Na, of certain amino-acids, and of the antiscorbutic, antineuritic, and fat-soluble vitamins; restriction of total calories was also studied. It was found that a deficiency of phosphorus was the only one which had any effect in lowering the titre of agglutinins and amboceptor. Experiment has not, therefore, been able so far to throw much light on the problem, and we must be chiefly guided by empirical knowledge.

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PUBLIC HEALTH OF SOUTH AFRICA.

THE annual report of the Department of Public Health of the Union of South Africa for the year ended June 30th, 1927,[1] bears close resemblance to its predecessors. Nothing remarkably new is found in its pages, but it is a faithful record of the activities of a rather small Government department, which, even if striking progress is absent, manifest steady improvement in many respects. The work of the department was again severely handicapped by the apparent unwillingness of the legislative assembly to put the Medical, Dental, and Pharmacy Bill on the statute book. This is a long overdue measure, and the same holds true in the case of the Food, Drugs, and Disinfectants Bill. The department also deplores its lack of power to deal with matters like general hospitals, district nursing, school medical inspection and cognate affairs. This is due to the Provincial Administrations having kept the control of these and many other matters too long in their own hands. Attention is drawn to the facilities which the Union Government offers to owners of sick cows, in contrast to the enormous difficulties surrounding the provision of medical aid for those living in remote localities. This does not refer to paupers, for whom the services of

[1] Pretoria: Government Printing and Stationery Office. Pp. 70. 2*s*. 6*d*.

district surgeons are available, but to the ordinary class of farmer. The cautious and gradual building up of a State-aided medical service, to be both preventive and curative, is suggested as a hopeful line of advance. The report makes good use of its opportunity to contradict the statements which have appeared in certain newspapers, that the whole population is a C 3 one. The European birth-rate reached 26·5, the European death-rate was as low as 10·15, the infantile mortality-rate was at 64·8; those are reassuring figures, and they show a steady improvement every year. The need for more knowledge of elementary health matters throughout the population is, however, still making itself felt. The department, it will be seen, keeps in touch with international health matters and epidemic intelligence through the channels nowadays available, and has its own intelligence system for inland use. But as regards local authorities, only nine of these have whole-time medical officers of health, and this seems to be worth attention.

The activities of the department include the usual inspections, and the publication and distribution of pamphlets on various health subjects. In future, conforming to the spirit of the time, more use will be made of the public press for such purposes. The sanitation and the water-supplies require a good deal of watching. The port health services have worked satisfactorily. Pending the necessary legislation little can be done to safeguard the public against adulteration of foodstuffs. The department controls the one and only tuberculosis sanatorium, another large hospital for venereal and infectious diseases, and not less than six leper institutions. The notifications of infectious diseases are admittedly too low, as many cases, especially among natives, are never seen by a medical man. It is specially mentioned that the very low figures for *ankylostomiasis* are explained by the dryness of most parts of the country. *Bilharziasis*, however, is rapidly spreading, and a reliable drug, which can be taken by mouth, is very urgently needed. The large outbreak of *dengue* on the Natal coast is apparently not expected to recur. There still is too large a prevalence of *enteric fever* in many centres. The position as regards *leprosy* is gradually improving, although the Government did not see fit to find funds for allowing proper research to be undertaken. That the Union of South Africa is now in the van of progress regarding leprosy is being universally recognised. *Malaria* is of importance for certain definite and generally sparsely populated areas only. A mosquito survey is being undertaken. *Plague* remains a source of danger. The total number of human deaths was only 56, but rodents are increasing in number in areas where they were scarce before, and plague infection of rodents is present over enormous areas. Much efficient work is being done on the eradication of rodents by means of gassing, poisoning, and burning. Urban and rural local authorities have been urged to enforce the rat-proofing regulations; appreciable progress has been made in this respect and the rat in many centres has been "built-out." Research work on *senecio disease* has found a way to prevent this insidious affection, which is conveyed by bread. The promptness with which a threatening outbreak of *small-pox* among the Asiatic and native population of Durban was stamped out by the department shows what can be achieved by a well-advised public health authority which has material, men, and knowledge at its disposal. The Government, however, still refuses to enforce the vaccination provisions of its own Public Health Act; it has stopped prosecutions of objectors, and as a result of this there is a rapid accumulation of unvaccinated persons. About *tuberculosis* no reliable figures can be given, but the need for investigation has been felt and a comprehensive scheme has been started. The position as regards *typhus fever* and *venereal diseases* is not clear. The department has also interested itself in the matter of house-building and public loans for that purpose.

Among other matters we have notes on the child welfare movement, which, under the patronage of Her Royal Highness Princess Alice, held a first congress, and both local authorities and the public show an increasing interest in such matters. There are special courses for a mothercraft certificate, and also for nursery nurses. For the importation and sale of opium and similar drugs Government regulations exist which were duly enforced, giving rise to a large number of prosecutions. Nearly 16,000 lb. of dagga were exported to London. The section on slaughtering and meat inspection shows the prevalence of measly meat and the difficulties arising therefrom which are as yet unsolved. The Union now possesses two Universities which provide a complete medical training; the number of medical students appears to be excessive. The report publishes a summary of the findings of a hospital survey committee, which are too elaborate for this brief abstract; reforms appear to be quite urgent, but no further move has been made. The report concludes with some remarks on hotels, public mortuaries, safety measures in mines, and prevention of seaside bathing accidents. Attention must finally be drawn to the beautiful coloured map showing the distribution of predominant veldt rodents and plague.

UNITED STATES OF AMERICA.

(FROM AN OCCASIONAL CORRESPONDENT.)

Mayor Thompson Rebuked.

THE whole public health world was indignant when the Mayor of Chicago dismissed from office the city health commissioner, Dr. Herman N. Bundesen, whose public health services are so well recognised that he was elected President of the American Public Health Association at its last annual convention. In place of Dr. Bundesen Mayor Thompson has appointed his personal physician, a man whose experience in public health work has not been tried out. Some of the most competent men in the health department have felt obliged to resign. Public health work in America has long been held back by the pernicious influence of politics. It has seemed lately that politicians were disposed to recognise the importance of tenure in office of civil servants. The action of Mayor Thompson has been a rude shock to rising hopes. A firmly worded editorial of protest has appeared in the *American Journal of Public Health* and an even more emphatic statement of protest has been issued by a group which is thoroughly representative of American sanitarians. "The action of the Mayor of Chicago," they say, "strikes a blow at the most fundamental principles of good government. It should meet with prompt and vigorous rebuke from all people of Chicago who care for the reputation of their city, and it should stimulate citizens everywhere to see that city charters are amended so as to make such interference with good health administration impossible in their own communities." The statement is signed by the following amongst others: the Professors of Public Health in the Universities of Johns Hopkins, Columbia, and Yale; the Presidents of Cornell and Leland Stanford Universities; and the Directors of the Schools of Public Health at Pennsylvania and Johns Hopkins Universities.

Reducing Mortality from Measles.

It is now just two years since the city of Syracuse, whose health department is coöperating with one of the health demonstrations of the Milbank Foundation, began its systematic attempt to meet the attack of the measles epidemic then due. They based their campaign on a recommendation first made by the late Dr. John Brownlee and subsequently reinforced by Dr. E. S. Godfrey [1] in this country. This plan is to concentrate the defence forces upon patients under three years of age, since at least 70 per cent. of deaths occur in this age-group. In order that early diagnosis which is so essential to successful treatment should be secured a publicity campaign was begun in good

[1] American Journal of Public Health, June, 1926.

time. The expected epidemic arrived, and the story of how it was met is well told by Drs. Ruhland and Silverman.[2] Ninety per cent. of the cases were diagnosed before the fifth day. This is a remarkable achievement. To it and to the use of convalescent serum must be attributed the drop in fatality for all cases under three years to 1·6 as compared with 5·1 in the previous (1923–24) epidemic. The fatality for the city as a whole is shown to be 43 per cent. below the normal fatality for American cities of its size. Dr. Stimson, of New York, has now drawn attention to an early eye sign—the appearance of a line of redness in the conjunctiva of the lower lid about one-third of the way from the lid margin to the fornix. This sign is found usually very soon after the onset of fever and is a valuable aid in early diagnosis. Dr. Stimson pleads also for early segregation, since he holds that mortality is due chiefly to secondary infections. It seems probable that earlier diagnosis secured by popular health education and suitable administrative measures may halve the present mortality. The closing of schools is from this point of view a hindrance rather than a help. Neither the schools nor the infant welfare centres were closed during the Syracuse epidemic of 1926–27.

Correspondence.

"Audi alteram partem."

SOME OBSERVATIONS ON ASTHMA.

To the Editor of THE LANCET.

SIR,—In view of the interest which is at present being taken in asthma, I feel that a few observations on this distressing complaint will not be out of place. In using the term "asthma" I refer to bronchospasm and not to the other manifestations of this condition. Until recently asthma was generally considered to be a form of bronchitis, produced mainly by exposure, to be treated by expectorants and confinement to bed on a milk diet. The prespastic stage was not recognised.

Asthma, however, never occurs in a patient in whom certain recognisable conditions have not previously taken place. In the child the previous history is usually that of frequent attacks of bronchitis and sometimes of one of the fevers. The child is said to take cold easily, often has a running nose and, possibly, some eczematous patches. In older patients the first attack is very often subsequent to, and merging from, an attack of influenza. Urticaria and eczema are frequent prespastic features, the latter often to be found in the region of the sternum. None of these conditions is constant, but it is rare not to elicit one or more from the history.

The most constant feature that I find in asthma is constipation. This is a condition that at all costs must be corrected. Many years ago Dr. James Adam of Glasgow showed that asthma results from two causes: a toxæmia and a lesion in the respiratory tract. I have been treating patients along these lines for the last ten years with satisfactory results; with increasing experience one finds it possible to discover the origin of the toxæmia without undue delay, although much care and time is usually necessary. For the nasal factor the help of a skilled rhinologist may be required. At the same time wholesale nasal surgery is to be deprecated. It is common to find asthma patients who have had antrum operations, but whose asthma remains unchanged. Frequently in such cases attention to ethmoid infection clears up both the bronchospasm and the antral discharge. Antral infection commences usually in an unhealthy ethmoidal region and treatment of the one without the other will accomplish little towards the relief of the asthma. The object of the rhinologist should be to remove any pathological condition in the nose and all accessory sinuses with the minimum of destruction. Much can be achieved by antiseptic dressings, as suggested by Dr. J. I. Dowling, of Albany, N.Y., but thorough knowledge of the technique is necessary. For the remainder, careful search must be made for any septic focus that may be present, such as apical abscess, gall-bladder infection, or chronic appendicitis, and appropriate steps taken to correct any such condition that may be found.

To ascertain the immediate cause in the production of bronchospasm and remove it is not enough. To discover that a patient gets asthma when he sleeps on a feather pillow, or is exposed to a dust-laden atmosphere is creditable, but to advise him that his only hope is to avoid these things is simply running away from his enemy. I have had many patients who have been advised that to obtain relief they would have to leave this part of the country and live in the south. Such advice is admission of failure of treatment, besides being impossible to a man whose business or professional ties are in the immediate neighbourhood. By attention to diet, bodily hygiene, adequate exercise when advisable; to proper bowel, skin, and kidney elimination, together with consideration of the points I have mentioned above, one is enabled to treat asthma with confidence. For patients with intestinal toxæmia, who cannot tolerate plain paraffin, the addition of kaolin is beneficial.

The greatest difficulty is to secure adequate cooperation between doctor and parents or patient. It is particularly hard to get a mother to realise that outdoor exercise is really necessary to her ailing child. She wants to keep the youngster wrapped up by the fire if the weather is cold, while the doctor should want him to discard his cotton-wool and chase his "Fairy" cycle up and down the pavement for an hour or so a day. Patients, when they have been free of asthma for some months, are apt to conclude that they are already cured. No greater mistake could be made, for if they are allowed to drift back into the original pathological conditions their asthma will return. It is desirable to keep them under observation at regular intervals, which as time goes on can become less frequent.

I am, Sir, yours faithfully,

Newcastle-on-Tyne, March 26th. F. HARRINGTON.

THE ASTHMA RESEARCH COUNCIL.

To the Editor of THE LANCET.

SIR,—Allow me to endorse the letter of Dr. Millais Culpin published in your issue of March 24th, and to refer your readers to the correspondence on Psychogenic Asthma that appeared in THE LANCET about nine months ago, especially to my own letter,[1] in which I pointed out that such cases are but specific cases of the "conditioned reflex."

I am, Sir, yours faithfully,

Shortlands, Kent, March 26th. A. WOHLGEMUTH.

To the Editor of THE LANCET.

SIR,—With reference to Dr. Culpin's letter, may I be allowed to point out that the Medical Advisory Committee to the Asthma Research Council realises fully the great importance of the psychological element in asthma, and for that reason Dr. R. D. Gillespie, physician for psychological medicine at Guy's Hospital, has already joined the committee.

I am, Sir, yours faithfully,

T. T. JEANS,
Hon. Secretary, Medical Advisory Committee.

Hove, March 26th, 1928.

*** We are asked to state that correspondence for the Asthma Research Council should be addressed to the Hon. Secretary of the Council, c/o The London Clinic, Ranelagh-road, London, S.W.1. Letters marked "Medical Advisory Committee" on the top left-hand corner of the envelope will be forwarded to Surg. Rear-Admiral Jeans.

[2] Ibid., February, 1928.

[1] THE LANCET, 1927, ii., 88.

TOXIC SYMPTOMS FROM PLASMOCHIN.

To the Editor of THE LANCET.

SIR,—I have been using plasmochin in the treatment of malaria for over a year with very satisfactory results. It may be of interest therefore to record that within the last week I have had four cases showing very definite toxic symptoms. All four were British, two were cases of subtertian malaria, and two were clinically malaria, no parasites having been found in the blood. In no case did the amount of plasmochin given exceed 0·06 g. in 24 hours, and in no case was the drug given for more than five consecutive days. The symptoms were cyanosis, very marked in two cases, and abdominal pain severe enough in two cases to prevent the patient sleeping during the entire night. These two patients were very much upset and complained bitterly that they felt that they had been poisoned. The supply from which the plasmochin employed was taken was part of a new consignment which had been in the country for less than six weeks.

I am, Sir, yours faithfully,

Khartoum, March 2nd, 1928. H. C. SQUIRES, M.D.

MEDICAL DIATHERMY IN MIDDLE-EAR DEAFNESS.

To the Editor of THE LANCET.

SIR,—I read with great interest the article on this subject by Dr. Dan McKenzie in your last issue. I have been using medical diathermy for these cases for the last 15 months and am in agreement with him on most points. I, too, have found that the cases most suitable for this method of treatment are those of Eustachian catarrh and chronic otitis media with sclerosis of the membrana tympani. My first case was a man, aged 69, who had suffered from deafness and severe tinnitus aurium for 14 years, the latter preventing sleep. His condition was the result of an old chronic otitis media. The tinnitus stopped during the first treatment and never returned, and the deafness has considerably improved. Whereas previously he had been deaf to the ticking of his clock, the mewing of his cat, and the barking of dogs, all these sounds became audible. He once said: "I like to go out and listen to the traffic."

My only criticism of Dr. McKenzie's article concerns the technique. I have tried various methods and am convinced that the following method is the best:—

I adopt the sitting posture and find that the patients prefer to sit than to lie on a couch, also the occurrence of vertigo afterwards is rare. The electrodes consist of two equal U-shaped plates 3 in. × 2½ in., cut from thin, flexible sheet metal. These are placed on the skull around the meatus and beneath the pinna. The anterior limb of each electrode bears a short "tab," which overlaps the external auditory meatus and makes contact with a plug of cotton-wool soaked in saline and inserted as far as the patient will allow. The metal electrodes are placed *directly* on the skin, good electrical connexion being obtained by means of a thin film of soap lather (shaving soap is the easiest to use). The electrodes are secured by two rubber sponges, one over each electrode, and a rubber bandage, which should be applied to pass over the vertex and the point of the chin.

I believe this method to be superior because: (1) It allows the patient to sit comfortably and with the minimum of restriction in an armchair and, if he wish, to read whilst having his treatment, which should last 15–30 minutes. (2) The electrodes, &c., are simple, and are easily and quickly applied in four minutes and removed in one. (3) The soap lather ensures perfect connexion by eliminating any danger from a greasy skin and uneven current penetration; and also the gravitation and drying-up so common with saline pads. (4) The path of the diathermy current is nearly 3 in. square and traverses the whole of the middle and inner ears and also the Eustachian tubes. A picture of the electrode is to be found in Sampson's "Practice of Physiotherapy."

One other point I must mention; one or two of my patients, particularly the younger cases of "otosclerosis," have improved in their general health and mental outlook. From being dull and listless and somewhat melancholic, they have become cheerful and of a more youthful appearance. If this is not a coincidence it can only be ascribed to the diathermy, as no other treatment of any kind was given.—I am, Sir, yours faithfully,

CEDRIC HILLIARD, M.B., B.Chir. Camb.

William-street, Knightsbridge, S.W., March 26th, 1928.

HYGIENE AT THE ROYAL HOSPITAL SCHOOL, GREENWICH.

To the Editor of THE LANCET.

SIR,—In view of Dr. J. A. Glover's remarks in the discussion on Juvenile Rheumatism at the meeting of the Section of Epidemiology of the Royal Society of Medicine on Feb. 24th (reported in THE LANCET for March 3rd, p. 447), it would seem to be suggested that the Royal Hospital School, Greenwich, has been allowed to exceed the number of boys for which accommodation is adequate. If Dr. Dudley's report is read, it will be seen that, whatever his personal opinion may be, he expressly states that the amount of air space and floor space is adequate according to the most accepted hygienic requirements. It is considerably better than that supplied in many other like institutions. The attack-rate for rheumatic fever in the Royal Hospital School in the Glover report is quoted as being 6 per 1000, in the Dudley report it is noted as 2 per 1000 in 1921, which is the correct number. This lower rate has been maintained since that year. I should be grateful if you would insert this letter, as, though I recognise that no reflection was probably in any way intended, the paragraph containing the remarks to which I am alluding might be construed to mean that those responsible for the health and care of the boys were lacking in the necessary vigilance, and were behind the times.

I am, Sir, yours faithfully,

PERCIVAL M. MAY,
Medical Officer to the Royal Hospital School,

March 23rd, 1928. Greenwich.

STEREO-FLUOROSCOPY.

To the Editor of THE LANCET.

SIR,—The two letters which appear in your issue of last week appear to charge me with a lack of fairness to British Radiology (Mr. W. E. Schall), and to British manufacturers (X-rays, Ltd.). As evidence of unfairness it is stated that apparatus of this kind was made years ago by British firms. But, did not I state in my communication of March 3rd that there was an apparatus similar in principle, designed for use with coils, in London, and I pointed out the difficulty of using that apparatus? I certainly did not state, as does Mr. Schall, that the apparatus was a complete success, or that the problem of stereo-fluoroscopy was satisfactorily solved. I rather agree with X-rays Ltd., that the methods in question did not prove to be of sufficient practical advantage to survive.

I can assure the gentlemen by whom these letters are signed that I yield to no one in my appreciation of the English manufactures, nor in my patriotism for the land of my birth, and if I travel to other countries to see the latest developments in medical or scientific apparatus, and if I publish what I see and hear, it is not with a spirit of unfairness to British manufacturers or lack of patriotism for England, but rather, that patients may have the advantage of the latest and best scientific developments and perhaps, even as the mouse in the fable, to be of some small help to the leonine manufacturers, in stimulating them to further and better efforts.

I am, Sir, yours faithfully,

F. HOWARD HUMPHRIS.

Great Stanhope-street, Park-lane, W.,
March 26th, 1928.

LIVER TREATMENT IN PERNICIOUS ANÆMIA.

To the Editor of THE LANCET.

SIR,—The following extract from a letter recently received from Australia may be of interest.

Dr. S. had treated a lady with signs of pernicious anæmia with poor results. After an absence of some time she put in an appearance at his rooms looking the picture of health. On inquiry as to what had produced this excellent result she said, "I went to a Chinese herbalist, who gave me a powder to take and this is the cause of my cure." The powder on examination looked like desiccated flesh and the patient said it was powdered liver of the carnivorous crow, an old Chinese remedy it appears. On further inquiry Dr. S. found that boys are regularly employed by Chinamen to catch crows for them, so that they may get the liver. Is it that the Celestials have been using for years a remedy which our men have only recently discovered?

Can any of your readers supply the answer? My correspondent is my father, who has recently given up active work in the profession, and Dr. S. is a well-known consultant in Melbourne.

I am, Sir, yours faithfully,
JOHN H. ANDERSON.

Ruthin Castle, North Wales, March 27th, 1928.

LOCAL FAT ATROPHY FOLLOWING INSULIN INJECTIONS.

To the Editor of THE LANCET.

SIR,—It may interest Drs. Carmichael and Graham to hear that I have a patient who developed a local fat atrophy following very large injections of insulin into the left thigh. It is now two and a half years since any insulin has been required and the thigh has returned to normal.

I am, Sir, yours faithfully,
Bridlington, March 26th, 1928. P. D. H. CHAPMAN.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Lt.-Comdr. G. E. Heath to be Surg. Comdr.
Surg. Lt. (D.) F. W. Watt to be Surg. Lt.-Comdr. (D.).

ROYAL NAVAL VOLUNTEER RESERVE.

Surg. Lt. S. W. Davidson to be Surg. Lt.-Comdr.

ROYAL ARMY MEDICAL CORPS.

Capt. E. S. Cuthbert to be Maj.
R. A. Kennedy to be Temp. Lt.
Temp. Lt. R. J. Monahan relinquishes his commn.

TERRITORIAL ARMY.

Capt. H. A. B. Whitelocke to be Maj.
Lt. O. F. W. Robinson to be Capt.
Lt. F. T. Birkinshaw resigns his commn.

ROYAL AIR FORCE.

The undermentioned Flight Lts. are granted permanent commissions in this rank: J. McM. Wilder and L. I. Hyder.

Temp. Capt. J. M. Jamie (Dental Surgeon, General List) is granted a temporary commission as a Flight Lt., on attachment to the R.A.F.

Flight Lt. C. T. Hastings (Capt., Army Dental Corps.) relinquishes his temporary commission on return to Army duty.

INDIAN MEDICAL SERVICE.

Majors to be Lieut.-Colonels: W. E. Brierley, J. B. Lapsley, C. H. Fielding, W. L. Watson, J. W. Barnett, Madan Lal Puri, R. B. Lloyd, A. C. Munro, Ram Nath Chopra, A. G. Tresidder, G. G. Jolly, H. Stott, A. A. C. McNeill, G. F. Graham, Maneck Dhunjishaw Wadia, T. D. Murison, Sohrab Shapoorji Vazifdar, J. J. H. Nelson, E. S. Phipson, F. F. S. Smith, and T. C. Boyd.

The undermentioned officers retire: Lt.-Cols. T. H. Gloster and L. Reynolds.

ROYAL VISIT TO MILITARY HOSPITAL.

On March 24th the King and Queen paid an unofficial visit to Queen Alexandra's Military Hospital, Millbank. They were received by Col. E. Ryan, the commanding officer, and Miss Osborne, matron-in-chief. The medical and surgical staff and sisters were presented to the King and Queen, who afterwards made a tour of the buildings.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

OFFICES REGULATION BILL.

ON March 20th in the House of Commons Miss WILKINSON asked leave to introduce a Bill to regulate offices and the employment of young persons therein; and for other purposes connected therewith. She said that the measure was designed to extend to people who worked in offices some of the protection that was at present given to those who worked in factories. The conditions in many big cities, especially owing to the great congestion at the present time, were rapidly growing worse, and it was felt that something ought to be done to protect the health of the men and women who worked in those offices. In one of the best and newest offices lately built in the City of London large provision was made for underground office accommodation. In the older buildings in the city where girls worked under-ground conditions were very bad indeed. They had also in these basement offices the enemy of damp. The effect on health was particularly bad at the present time, because many of these girls worked very long hours and special overtime at quarter days. A girl had written to her giving a description of the office in which she worked. It was only a cubicle with no windows and no ventilation, and five men besides herself worked in that unhealthy place. The girl added that the electric light had had a bad effect upon her eyes and she had been obliged to see an oculist, who said that her eyes were badly strained. One-third of the diseases of those who worked in offices were due to phthisis, and 122 out of every 1000 died from diseases which were caused by working in cramped spaces with bad light, bad ventilation, and very long hours. The Bill recognised the difficulty under which many employers worked at the present time. High rents were making overcrowding worse. The Bill threw the burdern of keeping the offices in a proper condition on the owner, but made provision for adjustment afterwards by the council. The Bill would prevent overcrowding; it would stop any premises being used as underground offices which were not so used on the date when the Bill passed into law, and briefly it made provision for adequate lighting and heating and proper sanitary accommodation.

Leave to bring in the Bill was granted without a division and the Bill was brought in and read a first time.

INVALIDING FROM THE NAVY: TUBERCULOSIS.

On Thursday, March 22nd, on the Report of Navy Estimates for 1928, Rear-Admiral BEAMISH said he wished to return to a subject which he had mentioned twice, that was the question of tuberculosis and the invaliding of men. One could not return to that particular matter too often because it was very serious. He realised that the Admiralty had their hands tied to some extent and that the question of invaliding was a matter for decision by secret and confidential instructions received by the Admiralty from the Treasury. He was not sufficiently conversant with Parliamentary rights to know whether they had any method whereby they could get hold of those instructions and see them. They ought to know more about them than they did at the present time. The Admiralty were condemned to be controlled by these regulations which imposed upon the men of His Majesty's Fleet very severe hardship when they were invalided. The extent of tuberculosis in the Navy had been higher for at least the last five years than it had been in the Army, and the conditions of life in the Navy were very largely responsible for that. He impressed upon the House the real importance of this matter and urged that the question should be adequately looked into and some change made, not only in regard to the actual methods of invaliding men, but in regard to the composition of the boards that invalided them, and in regard to the attributability as to the diseases and injuries for which the men were invalided.

The Incidence of Tuberculosis.

Dr. VERNON DAVIES said that he was tempted once again to press the question of tuberculosis in the Navy on the attention of the House. It was a most serious subject and affected a class of men who were not able to speak adequately for themselves. They had had statistics showing the number of cases of tuberculosis in the Navy and the extremely small percentage which got a pension or were held to be attributable—namely, 3 or 4 or 5 per cent. They could hardly wonder that these poor men who went into the Service physically fit in the prime of their youth and manhood and subsequently came out practically condemned to death must hold that in some way or another the Service had something to do with it. The different incidence of tuberculosis in the Army and the Navy to the detriment of the latter was perhaps not astonishing in view of the

cramped accommodation of the men in the battleships. After the previous debate on this matter in the House recently he looked into the matter further, and he would like to draw attention to a letter which he saw in the newspapers only the previous day, written by a man from Portsmouth, saying that there were 1600 men in that district who had been turned out of the Navy and whose disease had been held to be non-attributable to the conditions of service. He had looked into some statistics, and comparing tuberculosis in the Navy and in civil life, particularly for 1925, he was astonished to find that there was a different incidence in the tuberculosis rate in civil life and in the Navy. In a certain period of civil life between 20 to 25 years of age he thought the incidence of tuberculosis was decreasing, but in the Navy it was increasing. At first sight that would lead one to suspect that there was some condition in the Navy which was causing a change essentially different from what happened in civil life. He was recently informed that a committee was sitting to consider this matter. When he inquired when the last meeting was held he was told that it was some months previously because one of the members had not been very well. If that sort of thing went on this committee would be sitting during the next Parliament, and perhaps the Parliament after that, and he was anxious that something should be done at once. On the lowest computation there were some hundreds of men in this country slowly but surely dying of consumption, men who had served in the Navy and who were convinced that they had contracted the disease there; yet nothing was being done for them, except what they might get from the National Health Insurance scheme—15*s.* a week. A man had to be kept on that. A baby four or five months old could take 10*s.* worth of milk every week. This disease required so much nourishment that it was absolutely impossible for any tuberculosis case to live on the money which came from the National Health Insurance scheme. This state of matters was a scandal to the House of Commons, a scandal to the Admiralty, and a scandal to the country.

Lieut-Colonel HEADLAM (Parliamentary Secretary to the Admiralty), replying to the debate, said that the question of invaliding from the Navy was exercising very earnest attention and a committee had been appointed to go into the whole of the details. The whole question of hygienic conditions in the Navy had been referred to a consultative committee of experts outside the Admiralty.

The Report of the Navy Estimates was agreed to.

CONSOLIDATED FUND (NO. 1) BILL: DISTRESS IN COAL-MINING AREAS.

IN the House of Commons on March 26th, on the Order for the second reading of the Consolidated Fund (No. 1) Bill,

Mr. RAMSAY MACDONALD raised the question of distress in the coal-mining areas. He said that the Labour Party had recently sent a committee to inquire into the position in South Wales. In one mining valley they found schoolchildren suffering from lack of nourishment and there was a most distressing lack of boots and stockings. Two salient points in the survey of the County of Monmouth were, first, the constant deterioration of the financial position of the people, and secondly, the deterioration of the human beings who had to go through the present terribly trying conditions. In Blaina, 423 out of 3045 children were subnormal from various causes and the health of the mothers was steadily growing worse. The House could not allow this to go on. Many of these people, also, were falling out of National Health Insurance, which would result in the loss not only of all benefits, but ultimately of the old-age pension at 65 and the widows' and ophans' allowances. The first duty was to save the infants. They must see that all maternity and infant welfare equipment was up to date. They must also face the question of the provision of boots and shoes and clothing, and of keeping the children at school. The community should take these obligations on its shoulders and not leave it to private charity.

The Help Given by Public Bodies.

Mr. NEVILLE CHAMBERLAIN (Minister of Health) said that whatever measures they might take ultimately to cope with the problem, the process must be slow. They had to contemplate some period during which the position must be most carefully and sympathetically watched. There were various agencies and public bodies in every district whose duty it was to look after persons who were so impoverished that they were no longer able to look after themselves. He had to ask himself whether these agencies in South Wales were breaking down and whether the conditions there were so dangerous to health, or so different from those in other large industrial areas, where there were unemployment and distress, as to justify the employment of fresh agencies to supplement those already in existence. The report of the two Labour Members who went to South Wales was singularly moderate in its comments on the state of the health of the people there. They could not have such distress, unemployment, and impoverishment without some effect on the health of the people, but, while they must keep a very careful eye on what was happening to the public health, and especially the health of the children and expectant mothers, there was no reason up to the present to believe that it had reached any very disquieting or serious point. Until he was satisfied that the efforts of the people of South Wales to help was really exhausted he was most unwilling to entertain the idea of using for the undoubtedly serious shortage of boots and clothing among the children public funds which had to be paid for by other districts which also had distress to deal with. The Government's policy was to transfer the population from hopelessly derelict areas to other places.

Mr. PETHICK-LAURENCE said that the boards of guardians were refusing to find money for certain things which the doctors, ministers of religion, and Chambers of Commerce were urging them to do in the distressed areas. Where children were ill-nourished, school meals were provided by the local authority. On Saturdays and Sundays, the teachers took the food to the children in their homes, but the local guardians, in every case where that was done, deducted 2*s.* a week out of the money which they might give in relief to the families of the children so fed. This neutralised the benefit which the feeding conferred on the children. He urged that the rules should be relaxed, and that the guardians should be instructed not to deduct this money. They ought also to be allowed to provide boots for the children who needed them.

The Bill was read a second time.

COÖRDINATION OF THE FIGHTING SERVICES.

On March 27th, on the Order for the third reading of the Consolidated Fund Bill,

Sir R. HUTCHISON suggested an alteration in the administration of the fighting services in order to secure greater coördination and control than existed at the present time. During the war, he said, control was exercised by the War Cabinet, but since the Armistice that body had disappeared and nothing had taken its place. The fighting services had dropped back into their pre-war position, each being under a departmental chief. If they could secure unified control it would be possible to get a far better application of the forces wherever they were required in the world. There would be considerable advantage in such a system in regard to hospitals and other matters. It was also possible that they might get a wider and bigger medical service by bringing the medical services of the Army, Navy, and Air Force under one control.

Hospital Coöperation.

Mr. BALDWIN (Prime Minister) said that he would like to show, by way of illustration, what was being done by coöperation between the hospitals at the present time. In that respect there had been a move forward in the last year or two. The Royal Air Force maintained no separate hospital at home, except the two big isolation stations at Halton and Cranwell. They had no hospital in the neighbourhood, but there was a small officers' hospital of 25 beds at Uxbridge for dealing with flying accidents which might occur at that centre. But abroad, where the Royal Air Force were in control, they maintained their own hospitals, and during 1926 there were up to 3000 admissions of personnel of the Navy, the British and Indian Armies, and local forces of Iraq and Palestine treated in the Royal Air Force hospitals. The military hospitals at Cosham and Devonport were closed in that year, and arrangements were made for the sick of the Portsmouth military area and of the military stations in the Devonport area to be treated in the Royal Victoria Hospital, at Netley, or the Royal Naval Hospital, at Haslar, and the Royal Naval Hospital, at Plymouth. No less than 3000 of the Royal Air Force personnel received treatment in the Naval, Army, and Civilian hospitals during the last 18 months. In the same way, there had been considerable treatment of Air Force and Army patients in the Naval hospitals, both at home and abroad. The possible pooling of other hospital arrangements had been examined and, in some cases, had been found impracticable, but there were some places which were still under investigation. The Air Force made no general contracts in regard to medical supplies itself. They took the existing Army contracts, and standardisation and pooling had been agreed to in principle in regard to the ambulance trains, and the details were being worked out. The India Office were being invited to coöperate and a number of other matters were being studied now by the general medical services, &c. In research coördination was effected through three coördinating boards for chemistry, physics, and engineering.

The Bill was read a third time.

PETITION AGAINST MOTOR TAX.

Colonel HOWARD-BURY presented to the House of Commons on March 27th a petition from the Automobile Association signed by 920,000 motor owners and users. The petitioners stated that they were gravely concerned at the continuance of the system of motor taxation imposed by the

Finance Act, 1920, which was inequitable and unjust to the vast majority of motor users. They humbly prayed that the present method of motor taxation should be amended in favour of a flat rate duty on petrol plus a small registration fee.

HOUSE OF LORDS.

TUESDAY, MARCH 27TH.

PUBLIC HEALTH (DESTRUCTION OF VERMIN) BILL.

Lord STRATHSPEY, in moving the second reading of the Public Health (Destruction of Vermin) Bill, explained that the measure provided that if it appeared to the local authority on the certificate of a medical officer, or sanitary inspector, that any articles in any premises used for human habitation were infested with vermin, or were likely to be so infested, the local authority, at their expense, should cause those articles to be cleansed, disinfected, or destroyed. If it appeared to the local authority, on the certificate of the medical officer or the sanitary inspector, that any premises used for human habitation were infested with vermin, the local authority should give written notice to the occupier, or the owner if the premises were vacant, requiring him to cleanse the premises. The notice might require the removal of wallpaper and other covering on the walls. As a penalty for default, a fine not exceeding £5 was provided, and a daily penalty of 10*s*., and the local authority might do the work and recover the cost. Clause 3 provided that on the application of any person, the local authority might take such measures as they deemed necessary to free that person and his clothing from vermin. Where it appeared to the local authority, on a report from the medical officer, that any person or his clothing was infested with vermin and that person consented to be removed to a cleansing station, the local authority might cause him to be so removed. If he did not consent, a petty sessional court, if satisfied on the application of the local authority that it was necessary, could make an order for his removal to the cleansing station. It was provided that the cleansing of females should be effected only by a registered medical practitioner, or by a woman duly authorised by the medical officer. As soon as the occupier of a house became aware that it was infested he was required to send notice to the medical officer of health, and if a person became infested he must notify the medical officer.

Rejection Moved.

Lord BANBURY moved the rejection of the Bill, which, he said, was absolutely unnecessary. It enacted clauses already in existence, and some of the new clauses converted the private individual into a police officer. They compelled him to interfere in other people's business, and to do the business of the local authorities, who already had powers through their medical officers and sanitary inspectors to find out if people had got vermin on them or not.

Viscount GAGE said that the Minister of Health was not convinced that any real defect in regard to these matters existed under the present law.

After further discussion the Bill was rejected without a division.

HOUSE OF COMMONS.

WEDNESDAY, MARCH 21ST.

Training and Supply of Midwives.

Sir ROBERT THOMAS asked the Minister of Health whether he was prepared to institute an inquiry into the supply, pay, and training of midwives, with special reference to their distribution in rural areas.—Sir KINGSLEY WOOD (Parliamentary Secretary to the Ministry of Health) replied: My right hon. friend is taking steps to set up a committee to enquire into the general question of the training and supply of midwives.

THURSDAY, MARCH 22ND.

Diphtheria in London Elementary Schools.

Mr. OTHO NICHOLSON asked the Minister of Health if he was aware that parents of children attending elementary schools in the County of London were not notified of cases of diphtheria occurring in such schools and given an opportunity of isolating the child who had been attending; and that there was no disinfection of class-rooms in which cases had occurred; and what action he proposed to take.—Lord EUSTACE PERCY replied: The arrangements made by the London County Council for dealing with cases of diphtheria occurring in elementary schools are based on experience extending over 20 years, and I am advised that all reasonable precautions are taken. I do not, therefore, think that any intervention on my part is called for.

Death of a Child after Operation.

Mr. MACQUISTEN asked the President of the Board of Education whether he would inquire into the circumstances of the death of the son of Mrs. Maggie Potts, of Oulton, Wigton, Cumberland, who was a healthy child in Oulton school until, without the consent and in spite of the protests of his mother, he was operated on for tonsils and adenoids, with the result that he died, and under what authority such action was taken.—Lord EUSTACE PERCY replied: I have already received a report on this case from the school medical officer and I am sending my hon. friend a copy. I understand that the concurrence of the boy's mother was obtained before the operation was performed. The boy was operated upon at a hospital by a specialist; he was kept in the hospital for two nights after the operation, and was apparently quite well when discharged. I am advised that death was due to complications which subsequently arose, and that this regrettable occurrence was not due to any defect or failure in the authority's arrangements for treatment.

MONDAY, MARCH 26TH.

Medical Staff in the Crown Colonies.

Mr. WALTER BAKER asked the Secretary of State for the Colonies the authorised strength of the official medical staff in each of the Crown Colonies; whether any colony had a staff which was not up to strength; and what steps were being taken to deal with any shortage.—Mr. AMERY replied: As regards those Colonial medical appointments which are usually filled by recruitment in this country, it is only in the West African Medical Staff that the number of vacancies is considerable. For most other Colonial medical services there is a surplus of candidates. When vacancies occur they are advertised in the medical and other press and in filling appointments the Colonial Office receives assistance from the Universities, the Medical Schools, and the British Medical Association. Latterly a number of applications have been received from Dominions candidates. The following figures give the authorised strength (A.S.) and vacancies (V.) on the official medical staff in the various Crown Colonies:—

Colony.	A.S.	V.
S.A. High Commission—		
Basutoland	11	0
Bechuanaland	6	0
Swaziland	2	0
Kenya	94	6
N. Rhodesia	16	1
Nyasaland	22	0
Somaliland	11	0
Tanganyika	114	4
Uganda	77	2
Zanzibar	19	0
Gambia	6	0
Gold Coast	100	20
Nigeria	161	27
Sierra Leone	26	0
Cyprus	38	1
Gibraltar	7	0
Palestine	55	1
Ceylon	363	0
Mauritius	18	1
Seychelles	5	0
Fiji	68	0
W. Pacific High Commission—		
Gilbert and Ellice Islands	5	0
Brit. Solomon Isl.	3	0
St. Helena	2	0
Hong-Kong	18	4
Wei-hai-Wei	2	0
Straits Settlements and Malay States	310	10
Bahamas	9	0
Barbados	11	1
Jamaica	57	0
Cayman Island	1	0
Turks and Caicos Isl.	2	0
Leeward Islands	22	2
Trinidad	39	0
Windward Islands	19	1
Bermuda	4	0
British Guiana	43	0
British Honduras	8	0
Falkland Islands	3	0

Note.—The figures of authorised strength relate to the whole establishment of medical officers, both those who are recruited from this country and those who are recruited locally. The figures of vacancies relate only to appointments usually filled from this country, as it is only in regard to these that definite information is available.

Slum Clearances.

Sir WILFRID SUGDEN asked the Minister of Health what steps he was taking to assist slum clearance by alterations to Section 46 of the Housing Act, 1925; if the improvement scheme in Leeds, held up for two years by this section, was under his consideration as to its results; and what steps he proposed to take as to other schemes in the country disadvantageously affected also by the same section.—Mr. CHAMBERLAIN replied: The whole subject of slum improvement is receiving my personal consideration, but I am not yet in a position to state when it will be possible to bring in legislation; the report made following the inquiry into the particular scheme to which my hon. friend refers has been considered and my decision will be communicated at an early date.

TUESDAY, MARCH 27TH.

Notification of Infectious Diseases.

Mr. SHEPHERD asked the Minister of Health whether he would consider the question of so amending the Infectious Disease (Notification) Acts that any suspected infectious disease would have to be reported without awaiting the results of a bacteriological examination, where such disease was infectious in its early stages.—Mr. CHAMBERLAIN replied: No, Sir. The Acts in question do not require notification to be delayed pending the results of a bacteriological examination, and notifications are frequently made solely as the result of clinical examination.

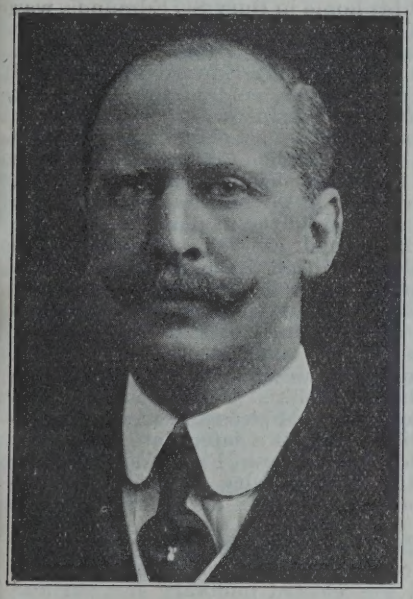
Obituary.

HUGH JAMES MOORE PLAYFAIR, M.D. LOND., F.R.C.P. LOND., F.R.C.S. ENG.,

CONSULTING OBSTETRIC SURGEON TO KING'S COLLEGE HOSPITAL.

THE death was announced last week of Dr. Hugh James Moore Playfair, the well-known obstetrician, which occurred at his house in London on March 25th, in the sixty-fourth year of his age. For the past few years his health had not been good, a fact which led to his retirement from the post of obstetric surgeon to King's College Hospital just three years ago.

Hugh Playfair was the son of General Archibald Playfair and the cousin of the well-known gynæcologist, William S. Playfair. He was born in Edinburgh, and received his early education at Fettes College, whence he proceeded for medical training to the schoolof King's College Hospital. He qualifiedas L.R.C.P. Lond.,M.R.C.S. Eng. in 1890, and graduated M.B. Lond. in the same year, proceeding to the M.D.degree in 1892. He held the usual resident appointments at the hospital, after which he took out a post-graduate course in Berlin, and returning to London was appointed curator of the anatomical and medical museum at his hospital and assistant demonstrator of anatomy. He had already been house accoucheur, and now decided to adopt the career of obstetric physician. He took the M.R.C.P. Lond., and three years later the F.R.C.S. Eng., and was also appointed physician to the Royal Waterloo Hospital for Women and Children. He filled the post of obstetric tutor in the medical school of King's College Hospital, and in 1904 became assistant obstetric physician and lecturer on practical obstetrics. From this time onward for 30 years Playfair's life was fully absorbed in professional work along his selected lines. He became obstetric and gynæcological surgeon to King's College Hospital; he examined in his subjects for the Conjoint Board of the Royal Colleges, and he wrote upon it in hospital and society reports, and occasionally in the medical journals; while in the medical school he was remarkable for the assiduity with which he taught his pupils as well as for the practical interest which he took in their lives. He held, in addition, gynæcological posts at the Metropolitan Hospital and at no less than three cottage hospitals, so that his practical experience became very large and varied.



DR. HUGH PLAYFAIR.

Photograph by Lafayette.

Mr. W. Gilliatt writes: "Hugh Playfair's death at the comparatively early age of 63, leaves a gap amongst King's men that cannot be filled. There was no one whose opinion was more eagerly sought, whether upon a difficult case, at a medical board, or by a student planning his career. Playfair brought to bear on each problem the same lively interest and reasoned judgment. He possessed the quality, rare in our day, of courtliness unspoiled by affectation, which made him hosts of friends in every walk of life. Many generations of students and nurses will grieve the loss of a most able and patient teacher. His lectures and ward rounds were always crowded, and the subjects so simplified by him as to become clear even to the newest clerk. When teaching he gave freely of time and effort. Though energetic by nature and brisk in manner, he never appeared in a hurry, and no contretemps ever ruffled him. In the midst of a busy life, which daily became more exacting, he kept a close interest in the athletic side of the medical school. He frequently attended the hospital Rugby football matches, and was a keen supporter of the medical and musical societies. Even after his retirement from the hospital three years ago, owing to failing health, he never lost touch with its affairs, maintaining the same keen interest in the hospital and medical school. There is little doubt that Playfair excelled in the clinical side of his special subject, and to those who had the privilege of working with him, it very soon became obvious that his opinion in the difficulties of gynæcology and obstetrics was second to none. He was unusually expert in obstetrics, and to see him carrying out practical obstetric manipulations was a wonderful lesson. During the many changes which followed each other in his branch of medicine, Playfair always kept himself abreast of thought and practice, as gynæcology developed from a branch of medicine to a surgical subject.

"As a colleague he was ideal, encouraging, always interesting and unusually generous to his juniors, who will sorely miss his balanced opinion and wise counsel. The feeling of all of us at King's is that we have lost a valued friend, a part of the institution itself, rather than a member of the staff. His charm of manner, cheerful friendliness, and deep sympathy were felt by all who worked with him. It can truthfully be said of Hugh Playfair that he never said a spiteful thing nor did a mean one."

In private life Dr. Hugh Playfair was known as a learned connoisseur of the arts. He married in Paris in 1905 Miss Eva Journault, by whom he had no children, but he adopted the son of his late younger brother, Arthur Playfair, the well-known actor; the boy is now a naval cadet. Dr. Playfair was an Associate of King's College and a Chevalier de la Légion d'Honneur. His death is regretted by a large number of personal friends and of patients, who owed much to his professional skill and advice.

LIONEL RICHARD FIFIELD, F.R.C.S. ENG.

ON March 21st, as we recorded last week, Mr. L. R. Fifield died from injuries sustained on the previous evening, when he and his wife were knocked down by a motor-car. The career thus ended was of exceptional promise, and his death at the age of 30 is felt with deep regret by friends at the London Hospital and elsewhere.

Fifield's medical work hardly began until the end of the war, and it was as a combatant that he enlisted in the Army. After serving with distinction in France, where he was wounded and received a commission, he entered the London Hospital in January, 1919. He had then only passed the preliminary scientific examination of the Conjoint Board, but succeeded in obtaining the M.R.C.S. Eng. in October, 1921, after two and a half years' work instead of the the usual four years. In December, 1923, less than four years after beginning work for the second professional examination, he became a Fellow of the Royal College of Surgeons of England at the early age of 25. He was soon recognised as a man of unusual ability, and after qualification held various resident appointments, including that of house surgeon to the Surgical Unit. For some years he was demonstrator of anatomy, and in 1925 was appointed surgical first

assistant to Mr. Hugh Lett and Mr. W. S. Perrin, a post which he held at the time of his death.

Clear reasoning and lucid explanation made him an excellent teacher, and he had already published two useful books, one on infections of the hand, and the other on minor surgery. The same qualities of clearness and brevity are seen in them, as in his contributions to our columns on diverticulitis and other subjects. For an essay on New Growths of the Bladder he was recently awarded the Buckston Browne Prize of the Harveian Society. This embodies an account of experiments on animals in connexion with the transplantation of the ureters into the intestine, and is being published in book form; it was in the press at the time of his death. A rapid worker, Fifield was endowed with a remarkable memory and was a quick, yet careful, operator. His judgment was good and his fine physique gave him an energy which was seemingly inexhaustible. In the Law Courts he was acquiring a reputation as a man of integrity, a reliable witness, and a surgeon of sound knowledge and argument. This exceptional equipment for his profession was associated with a friendly and unassuming nature. His juniors found him easy to get on with and learnt the more from him because he was easily approachable; whilst his keen ambition as a surgeon was never allowed to affect his generous and genial outlook on life.

The funeral, on March 23rd, was attended by a large number of the staff, residents, and students of the London Hospital.

RICHARD JOHN KINKEAD, M.D. DUB.

THE death of Dr. R. J. Kinkead, professor of obstetrics and gynæcology at University College, Galway, occurred at an advanced age on March 18th. He had been in failing health for some years, though he continued to work until a few months ago. Educated in the school of the Royal College of Surgeons, Dublin, and at Trinity College, Dublin, Dr. Kinkead obtained his qualifications at an early age, and at once began practice in Tuam. Some ten years later, in 1876, he was appointed professor of obstetrics in Queen's College, Galway, then a constituent college of the Queen's University of Ireland. He retained that post until the time of his death, through the many changes the College has undergone; but for the last few years many of his duties were performed by a deputy. He was also gynæcologist in the County Galway Hospital, and for many years medical officer of H.M. Prisons at Galway.

Dr. Kinkead's ability and character speedily gained for him a commanding position in the medical profession of the West of Ireland, and he had a large consulting and general practice. He took an important share in professional organisation, and was President of the Irish Medical Association for a term. For many years he was a member of the Council of that body, and was vice-president for Connaught. On his retirement from active work he was elected an honorary member of the Association in recognition of his manifold services to the profession. A man of solid intellect, he always found time for reading, and he often surprised his friends by a knowledge of unexpected by-paths in literature and art. What was most impressive about him, however, was his independence and his strength of character. He accepted his ideas from no one. He made up his mind deliberately and thoughtfully, and always with consideration for the views of others, but once his mind was made up it was difficult to move him. He had a high idea of the dignity of the medical profession, and no one in the Ireland of his day did more by example to make others respect the profession. As medical officer of the prison he allowed no interference from anyone—however high in the official world—with what he conceived to be the powers and prerogatives of the medical officer. He held that it was the medical officer's duty to stand between the rigour of prison routine and a sickly or delicate prisoner, and many of the political prisoners who were under his care at one time or another expressed their deep respect for his humanity and independence. By the people of the West of Ireland and by his professional colleagues he was equally respected. In his younger days he frequently contributed to the medical journals, and he wrote a useful book, "The Irish Medical Practitioner's Guide."

Dr. Kinkead was twice married, his second wife dying a few years ago. He had two sons, both of whom lost their lives as young men; one of them, an officer in the Royal Army Medical Corps, being killed during the war. Four daughters survive him.

HENRY GOFF KILNER, M.B., B.S.LOND.,

HON. SURGEON TO THE WEST SUFFOLK GENERAL HOSPITAL.

Dr. Henry Goff Kilner, who died at the age of 42, on March 17th, at his home in Bury St. Edmunds, was the second son of Dr. Charles Scott Kilner, and the fourth in succession of that family to practise medicine in the city. Educated at King Edward VI.'s School in Bury, Henry Goff Kilner entered the Middlesex Hospital where, after a successful career as a student, he gained the senior Broderip scholarship. Having qualified in 1909 at the English Colleges, he held the appointments of house physician, house surgeon, and obstetric house physician at the hospital, and later was demonstrator of anatomy in the medical school. He graduated M.B., B.S. Lond. in 1912, and held an appointment at St. Peter's Hospital, Covent Garden. On the outbreak of war, he was gazetted Second Lieutenant to the 5th Suffolks. He served as a combatant till the Army Order of the summer of 1915 requisitioned medically qualified men to associate themselves with the R.A.M.C., and was present at Gallipoli, where he served in a hospital ship. Subsequently he was on the headquarter staff at Mudros and then in Egypt with the 29th Division. At a later date he served with the 7th Field Ambulance in France and became D.A.D.M.S. to the 2nd Cavalry Division. While there he was awarded the Croix de Guerre and was twice mentioned in despatches. Returning to Bury St. Edmunds after the war, Kilner acted as surgeon to the hospital for disabled men under the Ministry of Pensions, and was elected honorary surgeon and honorary radiologist to the West Suffolk General Hospital, an appointment which he was holding at the time of his sudden death.

An intimate friend writes: Kilner could never spare himself where he felt that anyone was in need of him. His kindness was unbounded and it is many a lame dog he has helped over a stile. The hundreds who thronged the churchyard at the funeral bore eloquent testimony to the regard and respect of those whom he had benefited. He was the loyalest of friends and a cheerful and charming companion. The wind, the sun, and the open country were as the breath of life to him. He was a keen naturalist and archæologist, and never happier than when tramping over his native soil in search of some rare bird or showing a friend one of the many architectural glories with which his countryside abounds. He loved life and his spirit of enjoyment was infectious.

Dr. Henry Kilner married in 1916 Olive, daughter of the late Mr. R. T. Simpson, of Horsecroft, Bury St. Edmunds, who survives him with two young children.

ALFRED THOMAS TUCKER WISE, M.R.C.S.ENG., M.D. BRUX.

Dr. Tucker Wise, who died at a nursing home in London after a few days' illness on March 23rd, was in his eightieth year, having been born at Plymouth on Feb. 4th, 1849, son of Thomas Tucker Wise, Fleet Paymaster, R.N. He was educated at Eastman's Royal Naval Academy with a view to following his father, and had actually reached the grade of assistant paymaster before deciding for a medical career. He took his clinical studies at St. Mary's Hospital, London, qualifying in 1876, and filling a

series of house appointments at the hospital, where he was also vice-president of the Medical Society. At the same time he passed the M.D. Brux. with honours in obstetric medicine, and proposed to settle in London, towards which end he obtained appointments at the Western General and Kilburn Dispensaries, and the Infirmary for Consumption in Margaret-street. Consideration for his own health, however, led to a period of residence at various places in the High Alps, among them the Kursaal at Maloja, where he acted as resident physician. A contribution in 1881 on the Effects of Altitude on Phthisis was one of the first serious studies of the Alpine climate, and was followed by a brochure entitled "Alpine Winter in its Medical Aspects," which ran through five editions. Having obtained the Swiss Federal diploma by examination at Geneva University in 1891 Dr. Wise became one of the small group of British medical men at liberty to practise his profession in any part of Switzerland, and thereafter he regularly wintered at Montreux, where he had a large seasonal practice. Here he devised a postural method of treating pulmonary tuberculosis which encouraged drainage of the lung and induced artificial hyperæmia of the apex, and no doubt the views which he then expressed, in common with Dr. W. Ewart and others, ameliorated the lot of patients unable to empty the contents of bronchiectatic cavities other than by troublesome bouts of coughing. His interest in the physiology of climate was not limited to the Alps, and he addressed American medical congresses on more than one occasion on the climate of the Balearic Islands and other southern stations in Europe. During the war Dr. Wise acted as medical superintendent to the Devon County Sanatorium; recently he had been living in retirement at Strete, near Dartmouth. His favourite recreations were physical labour in the country, especially woodwork and forestry, and he was reputed something of an expert at billiards. His wife was a daughter of Mr. W. Hayne Maunder, of Malahide.

Medical News.

SOCIETY OF APOTHECARIES OF LONDON.—At recent examinations the following candidates were successful in the undermentioned subjects:—

Surgery.—P. C. Basu, Calcutta; M. Hurwitz, Leeds.
Medicine.—E. E. Bowen, Middlesex Hosp.; K. J. M. Graham, Charing Cross Hosp.; H. J. Harcourt, St. Thomas's Hosp.; M. Hurwitz, Leeds; N. S. J. Roberts (Section II.), Bristol and Royal Free Hosp.
Forensic Medicine.—K. D. C. Beckitt, Charing Cross Hosp.; E. E. Bowen, Middlesex Hosp.; M. Hurwitz, Leeds; H. S. Marks, Guy's Hosp.; E. O. Watson, St. Bart.'s Hosp.; C. C. F. White, Guy's Hosp.; W. Ziv, Bâle and London Hosp.
Midwifery.—H. W. Maurer, St. Mungo's, Glasgow; C. K. McCoan, St. Mary's Hosp.; L. W. Sanders, Manchester and Charing Cross Hosp.; W. Ziv, Bâle and London Hosp.

The Diploma of the Society was granted to the following candidates, entitling them to practise medicine, surgery, and midwifery: E. E. Bowen, H. J. Harcourt, and N. S. J. Roberts.

VICTORIA UNIVERSITY OF MANCHESTER.—At recent examinations the following candidates have satisfied the examiners:—

DIPLOMA IN PUBLIC HEALTH.

W. C. V. Brothwood, Miriam Florentin, Thomas Peirson, J. B. Wiley.

DIPLOMA IN PSYCHOLOGICAL MEDICINE.

Part I.—Richard Handley, J. E. Howie, W. H. Shepley, Harry Stafford.

The Dauntesey senior medical scholarship has been awarded to R. V. Wright, and the Dauntesey junior medical scholarships to C. H. Gray and Philip Zimmerman.

UNIVERSITY OF LIVERPOOL.—At recent examinations the following candidates were approved:—

DIPLOMA IN MEDICAL RADIOLOGY AND ELECTROLOGY.

N. J. Barton, R. V. Berrington, E. O. Fox, Norah M. Walker.

DIPLOMA IN TROPICAL HYGIENE.

R. R. Evans, W. J. Laird, H. V. R. Miller, G. H. Pearson, J. H. Pottinger, S. A. Wilkinson.

FINAL EXAMINATION FOR M.B. AND CH.B. DEGREES.

Part I.—J. D. Bright-Richards, J. P. Flanagan.
Part II.—A. L. Beresford, A. E. Carrol, A. Gardner, W. W. Gerrard, G. A. Talwrn-Jones.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—An election to fill four vacancies on the Council of the College will take place on July 5th, and the list of candidates is now closed. The vacancies occur through the death of Mr. Thelwall Thomas, and the retirement in rotation of Sir Anthony Bowlby, Sir D'Arcy Power, and Mr. F. J. Steward, a vice-president of the College. Mr. Steward offers himself for re-election, and the other candidates, in order of seniority as Fellows, are: Mr. L. P. Gamgee, Mr. R. G. Hogarth, Mr. T. P. Legg, Mr. H. W. Carson, Mr. J. P. Lockhart-Mummery, Mr. Russell Howard, Sir Crisp English, Mr. Harold Wilson, Mr. C. C. Choyce, Mr. R. E. Kelly, and Mr. Robert Milne.

UNIVERSITY OF EDINBURGH.—The Senate has decided to confer the degree of doctor of laws on Sir John Rose Bradford, P.R.C.P. Lond.; Dr. George Lovell Gulland, formerly professor of medicine, Dr. James Haig Ferguson, formerly senior lecturer in midwifery, and Dr. Robert A. Fleming, formerly senior lecturer in clinical medicine in the University; Mr. H. S. Wellcome, founder of the Wellcome Research Laboratories and the Wellcome Bureau; and Dame Mary Scharlieb, M.D.

SWINEY PRIZE FOR MEDICAL JURISPRUDENCE.—The next award of the Swiney prize, which consists of a cup, valued at £100, and money to the same amount, will be made in January, 1929. The award is made jointly by the Royal Society of Arts and the Royal College of Physicians on every fifth anniversary of the death of Dr. Swiney, and is given for the best published work, alternately, in Medical and General Jurisprudence. The award in 1929 is offered for a work in Medical Jurisprudence. Particulars may be had from the Secretary of the Royal Society of Arts, John-street, Adelphi, London, W.C. 2.

UNIVERSITY OF LONDON.—At a meeting of the Senate held on March 21st Mr. W. W. Jameson, M.D., M.R.C.P., was appointed as from Jan. 1st, 1929, to the University Chair of Public Health, tenable at the London School of Hygiene and Tropical Medicine. Dr. Jameson received his medical education at Aberdeen University, the Rotunda Hospital, Dublin, and University College, London. He graduated in Arts at the University of Aberdeen in 1905, and in Medicine, with distinction, four years later. In 1912 he proceeded to the M.D. Degree with commendation, and in the following year he became M.R.C.P. Lond. From 1914–19, having taken the D.P.H., Dr. Jameson held the offices of Assistant and Lecturer in the Department of Hygiene at University College, London, and Assistant and Deputy Medical Officer of Health for the Metropolitan Borough of Stoke Newington. From 1915–19 he was on war service and was mentioned in dispatches. In 1919 he returned to University College, and in 1920 was appointed Medical Officer of Health and School Medical Officer for Finchley, and later Deputy Medical Officer of Health for the Metropolitan Borough of St. Marylebone. Whilst holding these appointments he studied law and was called to the Bar in 1922. In 1925 he was invited by the Town Council of the Borough of Hornsey to become their Medical Officer of Health and School Medical Officer, which posts he still holds, and a year ago he took over the office of Medical Superintendent of the Hornsey, Finchley and Wood Green Joint Isolation Hospital. Since 1926 he has also been Lecturer on Public Health and Preventive Medicine at Guy's Hospital Medical School.

The degree of D.Sc. in Anatomy was conferred on Mr. W. E. Le Gros Clark, university professor of anatomy at St. Bartholomew's Hospital Medical College, and the degree of D.Sc. in Biochemistry on Mr. F. W. Fox for a thesis on sterol metabolism.—Dr. John Fawcett has been elected chairman of the committee of medical members of the Senate, and Sir John Rose Bradford, F.R.S., vice-chairman of the University College Committee.

Mr. Walter Spencer proposed, and Dr. Graham Little, M.P., seconded, a resolution "That the attention of the Senate be drawn to the limitations placed upon the medical education of women undergraduates and that a committee be appointed to consider the question and report to the Senate thereon." This motion was carried and the committee was constituted as follows: Sir William Beveridge (vice-chancellor), Prof. S. L. Loney (chairman of Convocation), Prof. L. N. G. Filon, F.R.S. (chairman of the Academic Council), Dr. Graham Little (chairman of the External Council), Sir Holburt Waring (chairman of the Finance Committee), Mr. Walter Spencer, the Rev. W. R. Matthews (Dean of King's College), Prof. W. P. Halliday (principal of King's College), Sir Andrew Taylor (chairman of the Managing Committee, University College); Miss Ethel Strudwick (principal of St. Paul's School for Girls), and Miss Margaret Tuke (principal of Bedford College for Women).

AFTER April 2nd the East End Mothers' Lying-In Home will be known as the East End Maternity Hospital.

UNIVERSITY OF OXFORD.—Dr. C. G. Douglas has been reappointed demonstrator in general metabolism, and Dr. C. W. Carter has been appointed demonstrator in biochemistry.

UNIVERSITY OF DUBLIN.—The honorary degree of Master of Surgery is to be conferred on Sir John Bland-Sutton.

Sir Humphry Rolleston, Regius Professor of Physic in the University of Cambridge, has been made an honorary doctor of laws of Jefferson Medical College, Philadelphia.

ROYAL SOCIETY OF MEDICINE.—The Society's house and library will be closed from Thursday, April 5th, to Tuesday, April 10th, both days inclusive.

MEDICAL GOLFING SOCIETY.—The semi-finalists in the society's spring knock-out tournament are: E. Laming Evans, G. Dawson, A. Scott-Gillett, and R. A. Woodhouse.

ROYAL NAVY MEDICAL CLUB.—The annual dinner will be held at the Trocadero Restaurant, Piccadilly-circus, London, on Thursday, April 26th, at 7.30 P.M., for 8 P.M. Members who wish to be present should inform the hon. secretary of the club, Queen Anne's Chambers, Tothill-street, S.W. 1, not later than April 18th.

DENTAL OFFICERS IN THE ROYAL NAVY.—The following candidates were successful in a recent competition for commissions as dental officers in the Royal Navy: William Holgate, P. S. Turner, T. G. C. Emberson (Guy's), and A. A. Gardner (Dub.).

ROYAL ACADEMY OF MEDICINE IN IRELAND.—On March 22nd, in the Hall of the Royal College of Surgeons, Dublin, Colonel W. P. MacArthur delivered a lecture on Medical References in Pepys. The lecture, which dealt in some detail with the history of plague in England and Ireland culminating in the Great Plague of 1665, and with the prevalence of small-pox in the seventeenth century, was followed with great interest.

MAUDSLEY HOSPITAL.—A series of six clinical demonstrations of types of mental disease has been arranged by the London County Council. They will be given at the hospital, Denmark-hill, London, S.E., by the medical superintendent, Dr. Edward Mapother, on successive Wednesdays, at 2.30 P.M., beginning on April 25th. The series will be illustrated by numerous cases.

ROYAL SANITARY INSTITUTE.—A sessional meeting will be held on Friday, April 13th, at 5 P.M., in the Sessions House, Maidstone, when Dr. Alfred Greenwood will open a discussion on the Health of Hop-pickers and the Sanitation of Hop-pickers' Encampments. Prof. A. Bostock Hill will take the chair. On the following day visits will be paid to hop-pickers' encampments and hospitals. Those wishing to attend the discussion and visits should notify Dr. A. Greenwood, Sessions House, Maidstone, not later than April 6th.

THE death is announced, on March 26th, suddenly, at Eastbourne, of Dr. William Muir-Smith, J.P., at the age of 67. Dr. Muir-Smith was a native of Irvine, Ayrshire, and was educated at Glasgow University, qualifying in 1884. He was in practice at Bourton-on-the-Water before settling in Eastbourne, where he spent practically the whole of his professional life. Some twenty years ago he contributed an article to our columns, dealing with the ethical side of contract practice on lines which later became accepted policy.

WOLVERHAMPTON AND DISTRICT CLINICAL CLUB.—The first general meeting of this club was held at the General Hospital on Tuesday, March 20th, Dr. S. C. Dyke in the chair, and 36 members present. Discussion centred round the constitution of the club, which is designed to give members an opportunity for exchanging experiences and opinions in an informal way. The next meeting will be held at the General Hospital, Wolverhampton, on Tuesday, April 17th, at 8.30 P.M. The hon. secretary is Dr. R. L. Mackay, Woodfield-avenue, Wolverhampton.

EXTENSION OF ANCOATS HOSPITAL.—The annual report of this hospital proposes that advantage should be taken of its approaching centenary to appeal for help for extensions. The present 114 beds and single operating theatre are stated to be quite inadequate to an accident and urgency claim of over 20,000 cases per annum. On the analogy of the 118 voluntary hospitals reported upon by the British Red Cross Society the facilities should be treble what they are. It is hoped to raise at least £100,000 to provide new casualty, X ray, and massage departments, two operating theatres, a laundry, and the additional accommodation required for nurses and domestic staff.

ROAD ACCIDENTS AT LEEDS INFIRMARY.—At the annual meeting of this institution it was stated that last year over 1000 persons injured in motor accidents were treated at a cost of £4399, but that the total sum recovered from these patients was only £62.

LONDON HOMŒOPATHIC HOSPITAL.—At the annual meeting it was stated that last year 1793 in-patients and the "record" number of 14,643 out-patients were treated. Increased activity has, however, produced the usual result of a discrepancy between income and expenditure, and the accumulated deficits now reach nearly £20,000.

KING EDWARD'S HOSPITAL FUND.—The Earl of Iveagh has been appointed a member of the General Council, in succession to his father.—Mr. Eardley Holland has been appointed a member of the Distribution Committee in place of Sir Francis Champneys, who has retired from the committee, of which he has been a member for 18 years.

SHEFFIELD PENNY-IN-THE-POUND SCHEME.—Last year this scheme produced £111,285, and the total amount of money yielded by all the sources controlled by the Joint Hospitals Council was £116,554. Hitherto the scheme's best year was 1925, when £108,000 was collected. Since 1920 the number of beds in the Sheffield hospitals has been increased by 277, and the total is now 1046.

FRACTURE DEPARTMENT AT WOLVERHAMPTON.—The annual report of the Wolverhampton and Staffordshire Hospital announces that, in order to cope with the increasing number of fractures, it is intended to set up a fracture and orthopædic department on modern lines. It will be placed under the charge of Mr. Anthony Blackstock.

CITY OF LONDON MATERNITY HOSPITAL.—At the annual court of governors, the Lord Mayor of London, the president, laid stress upon the need of a new nurses' home, which will cost £30,000. In the antenatal work last year there were 6000 attendances as compared with 3726 two years ago. The hospital trained 36 medical practitioners and students, 67 midwives, and six maternity nurses.

SEAMEN'S HOSPITAL SOCIETY.—Having recently taken over the Alexandra Memorial Hospital at Marseilles the society now possesses seven establishments. Last year's income was £89,996, and the expenditure £82,978. A new pathological department is to be added to the extension of the Dreadnought Hospital at Greenwich, which needs a supply of radium, for the purchase of which £900 is still required.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

TUESDAY, April 3rd.—8.30 P.M., ORTHOPÆDICS. Paper: Dr. Charles Scudder (Boston, Mass.): The Treatment of Recent Fractures by Operation; to be followed by Sir Robert Jones, Prof. E. W. Hey Groves, Mr. H. A. T. Fairbank, and Mr. W. A. Cochrane.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham.

MONDAY, April 2nd.—2.30 to 5 P.M., Medical, Surgical, and Gynæcological Clinics. Operations.

TUESDAY.—2.30 to 5 P.M., Medical, Surgical, Throat, Nose and Ear Clinics. Operations.

WEDNESDAY.—2.30 to 5 P.M., Medical, Skin, and Eye Clinics. Operations.

THURSDAY.—11.30 A.M., Dental Clinics. 2.30 to 5 P.M., Medical, Surgical, and Ear, Nose and Throat Clinics. Operations.

On Monday and Wednesday, at 2.30 P.M., there will be demonstrations of Medical Cases by Dr. A. J. Whiting and Dr. J. B. Alexander, respectively.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith.

MONDAY, April 2nd.—10 A.M., Dr. Dowling: Skin Department. 2 P.M., Dr. Trevor Davies: Gynæcological Department. 2 P.M., Dr. Ironside: Medical Out-patients.

TUESDAY.—10 A.M., Medical Registrar: Medical Wards. 2 P.M., Mr. Sinclair: Surgical Out-patients. 2 P.M., Mr. Hamblen Thomas: Throat, Nose, and Ear Department. 2 P.M., Mr. Addison: Operations.

WEDNESDAY.—10 A.M., Dr. Burnford: Medical Wards. 2 P.M., Mr. Tyrrell Gray: Operations. 2.30 P.M., Mr. Donald Armour: Surgical Wards.

THURSDAY.—10 A.M., Dr. Grainger Stewart: Neurological Department. 2 P.M., Mr. Simmonds: Surgical Out-patients. 3 P.M., Sir Henry Simson: Gynæcological Ward.

Daily, 10 A.M. to 5 P.M., In-patients, Out-patients, Operations, Special Departments, Anæsthetic and Operative Surgery Classes.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.

THURSDAY, April 5th.—4 P.M., Dr. Schlesinger: Some Complications of Acute Specific Fevers in Children.

LEEDS AND WEST RIDING MEDICO-CHIRURGICAL SOCIETY POST-GRADUATE COURSE ON CANCER.

WEDNESDAY, April 4th.—3.30 P.M. (in the Medical School, Leeds), Prof. G. E. Gask: Radium in the Treatment of Malignant Disease.

MANCHESTER ROYAL INFIRMARY.

TUESDAY, April 3rd.—4.15 P.M., Mr. E. D. Telford: Pseudo-Coxalgic and Allied Conditions.

ANCOATS HOSPITAL POST-GRADUATE LECTURES, Mill-street, Manchester.

THURSDAY, April 5th.—4.15 P.M., Mr. P. G. McEvedy: Treatment of Hernia.

Appointments.

KENNEDY, C., M.B., Ch.B. Edin., has been appointed Assistant Gynæcologist to the Deaconess Hospital, Edinburgh, and to the Leith Hospital.

PIERCE, W. J., M.B., Ch.B. Liverp., Junior Medical Officer to the Liverpool Open-air Hospital for Children, Leasowe.

WEATHERHEAD, A. G. N., M.B., Ch.B. Edin., Medical Officer to the Royal Residential Schools for the Deaf, Old Trafford, and to Henshaw's Institution for the Blind.

St. John's Hospital for Diseases of the Skin: CORSI, H., M.B., B.Chir. Camb., Senior Honorary Medical Registrar; and HARTSTON, L., M.B., B.S. Lond., Junior Honorary Medical Registrar.

Surgeons under the Factory and Workshop Acts: CLAPPERTON, T., M.B., Ch.B. Aberd. (Oakham); LAWSON, R., M.D., Ch.B. Edin. (Hipperholme, W. Riding); and O'REILLY, J. J., M.B., Ch.B. Belf. (Chepstow).

Vacancies.

For further information refer to the advertisement columns.

Bangor, Carnarvonshire and Anglesey Infirmary.—H.S. £200.

Belgrave Hospital for Children, Clapham-road, S.W.—H.S. and Asst. H.P. Each at rate of £100.

Burton-on-Trent Infirmary.—H.S. £150.

Cambridge, Addenbrooke's Hospital.—Res. Anæsthetist. At rate of £180.

Carlisle Non-Provident Dispensary.—Res. M.O. £250.

Derbyshire Royal Infirmary, Derby.—H.S., Asst. H.S., and Cas. O. Each £150.

Doncaster Royal Infirmary.—Third H.S. At rate of £150.

Dover, Royal Victoria Hospital.—H.S. £180.

Dreadnought Hospital, Greenwich.—Anæsthetist. 50 guineas. Also Surgeon in charge of Out-patients.

Exeter, Royal Devon and Exeter Hospital.—H.P. At rate of £130.

Farnborough, Bromley Union Institution.—Res. M.O. £800.

Galway University College.—Professorship of Therapeutics, &c. Also Midwifery. Each £308–£320.

Halifax Royal Infirmary.—Third H.S. At rate of £100.

Hampstead General and North West London Hospital, Haverstock Hill, N.W.—H.S. and H.P. Also Cas. M.O. Each at rate of £100.

Holborn and Finsbury Hospital, Archway-road, N.—Second Asst. M.O. £300.

Hôpital Français, 172, Shaftesbury-avenue, W.C.—Phys. to In-patients. Phys. to Out-patients. Also Jun. Res. M.O. £100.

Hospital for Consumption and Diseases of the Chest, Brompton, S.W.—H.P. £50 for six months.

Hospital for Epilepsy and Paralysis, Maida Vale, W.—Res. M.O. and H.P. At rate of £150 and £100 respectively.

Hospital for Sick Children, Great Ormond-street, W.C.—H.S., H.P., and Asst. Cas. O. Each £50.

Hospital for Women, Soho-square, W.—Asst. Anæsthetist.

Indian Medical Service.—Commissions.

Laboratories of Pathology and Public Health, 6, Harley-street, W.—Asst. Pathologist. £500.

Leigh Infirmary, Lancashire.—Res. H.S. At rate of £150.

Liverpool Eye and Ear Infirmary.—Third Hon. Anæsthetist.

London Fever Hospital, Islington, N.—Hon. S.

Lucknow University.—Professor of Anatomy. Rs.1450 per mensem.

Manor House Hospital, Golders Green, N.W.—H.S. At rate of £200.

Metropolitan Hospital, Kingsland-road, E.—Sen. H.P. and Sen. H.S., Jun. H.P. and Jun. H.S. Also two Cas. O.'s. Each at rate of £100.

Mildmay Mission Hospital, Austin-street, Bethnal Green, E.—Sen. Res. M.O. Also Asst. Cas. O. At rate of £140 and £100, respectively.

Miller General Hospital for South-East London, Greenwich-road, S.E.—Cas. O. £150.

Ministry of Health, Whitehall, S.W.—Deputy Regional M.O. £800.

Norwich, Norfolk and Norwich Hospital.—Cas. O. and H.S. £120.

Paddington Green Children's Hospital, London, W.—H.P. and H.S. Each at rate of £150.

Preston, Lancs, County Mental Hospital, Whittingham.—Sixth Asst. M.O. £350.

Prince of Wales's General Hospital, Tottenham, N.—H.S.'s and H.P., also Jun. H.S. and Jun. H.P. At rate of £120 and £90 respectively.

Princess Louise Kensington Hospital for Children, North Kensington, W.—H.P. and H.S. At rate of £100 and £75 respectively.

Queen's Hospital for Children, Hackney-road, E.—P. in charge of Skin Dept.

Rhondda Urban District Council.—Asst. M.O. £600.

Royal National Orthopædic Hospital.—Med. Reg. £150.

St. Mary's Hospital for Women and Children, Plaistow, E.—Asst. Res. M.O. At rate of £130.

South Eastern Hospital for Children, Sydenham, S.E.—Asst. Res. M.O. At rate of £75.

Walsall County Borough.—Clin. Tuberculosis O., &c. £750.

Walsall General Hospital.—H.S. At rate of £125.

Walsall Poor-law Institution.—Res. M.O. £600.

Weston-super-Mare Hospital.—Res. M.O. £130.

The Chief Inspector of Factories announces a vacancy for a Certifying Factory Surgeon at Kingston (Surrey).

Births, Marriages, and Deaths.

BIRTHS.

REID.—On March 23rd, at Rodney-street, Liverpool, th wife of Andrew McKie Reid, *M.C.*, F.R.C.S., of a daughter.

MARRIAGES.

CLAYE—KNOWLES.—On March 26th, at S. Mary's Church, Garforth, Andrew Monyihan Claye, M.D. Leeds, M.R.C.S. Eng., to Marjorie Elaine Knowles, M.B. Leeds, M.R.C.S. Eng. (By Licence.)

MURRAY—CLARK.—On March 24th, at St. Barnabas' Church, Kensington, John Murray, O.B.E., M.B., C.M., of Llandrindod Wells, to Ethel Mary, daughter of the late George Miller, Esq., Newberries, Radlett, Herts.

NORMAN—DAVIES.—On March 22nd, at Llanishen Parish Church, Anthony Norman, M.B., B.S., to Muriel Davies, M.B., B.S., D.P.H., younger daughter of Mr. and Mrs. Morris J. Davies, Lake-road West, Cardiff.

DEATHS.

DAVISON.—On March 18th, at Bryanstone-road, Bournemouth, James Davison, M.D., in his 82nd year.

MUIR-SMITH.—On March 26th, suddenly, at Riversdale, 8, Upperton-road, Eastbourne, William Muir-Smith, M.B., C.M., J.P., aged 67.

MULLOCK.—On March 23rd, at a nursing home in Norwich, Richard Wilson Mullock, M.D., of Southwold, Suffolk.

PHILLIPS.—On March 23rd, at Harpur-place, Bedford, Francis Barclay Willmer Phillips, M.A., M.D. Oxf., B.Sc. Lond., D.P.H. Camb., Medical Officer of Health for Bedford, aged 75.

PLAYFAIR.—On March 25th, Hugh James Moore Playfair, M.D., F.R.C.P., F.R.C.S., Chevalier de la Légion d'Honneur, of Upper Brook-street, W., in his 64th year.

SEARSON.—On March 19th, James Searson, M.D., L.R.C.P.I., L.R.C.S.I., of Welbeck-street, W., in his 69th year.

STARK.—On March 18th, at Wanstead Park-avenue, E., Dr. Arthur Campbell Stark, aged 63.

WISE.—On March 23rd, at a nursing home in London, after a few days' illness, Alfred Thomas Tucker Wise, M.D., M.R.C.S., L.R.C.P., Swiss Federal Diploma in Medicine, of North Mills, Strete, Devon.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

PHYSIOLOGICAL PERSONALITY.*

By Robert Hutchison, M.D. Edin., F.R.C.P. Lond.,
PHYSICIAN TO THE LONDON HOSPITAL.

By physiological personality I mean those slight differences in the working of the bodily machine which occur in different individuals, but which are within the limits of health. Differences in the structure and configuration of the machine—in the "order of architecture" to which it belongs to use Mercier's phrase—we are all familiar with and those constitute the anatomical personality or physique. The peculiarities of the physique and of the physiological personality together determine how the machine will behave in various circumstances—or, if you like, how it will react to the stresses of the environment—and may be spoken of as its "constitution," by which is really meant the sum total of its structure and working. In the same way we might speak in the case of a motor of its having a Rolls Royce or a Ford "constitution," meaning that it has a structure and mechanism peculiar to those makes. In some persons the constitution diverges so far from the mean as to induce a proclivity or predisposition to suffer from particular types of disease, and such a type of constitution may be called a "diathesis," and accordingly we hear of a "rheumatic" diathesis, of a "tuberculous" diathesis, and so forth, and these may be recognisable from the anatomical personality alone. To return to the simile of the motor we might in similar language describe a type of car which from its structure and working has a tendency to get over-heated as suffering from a "calorific" diathesis.

Again, just as the "constitution" of the bodily machine determines liability or otherwise to disease so, on the mental side, it determines "temperament" which is that part of the character which is dependent upon anatomical and physiological peculiarities of the individual and is unalterable; but of the relation of character to physiological personality I shall have something further to say later on.

Now, although we still sometimes hear a patient say that Dr. So-and-So "understands his constitution" there is no doubt that less importance is attached by the profession to differences in constitution than was once the case. As you are doubtless aware it was the fashion at one period in medical writings to describe four main types of constitution—the sanguine, lymphatic, bilious, and nervous, based mainly upon external differences in bodily appearance—i.e., upon anatomical personality. Gradually, however, these terms have disappeared from medical literature. Nor is it difficult to understand the reason for this. When physiology first began to be accurately studied, the methods employed were such as to reveal only the nature of the grosser processes and modes of working in which all human beings are alike, and it is only within recent times that they have become sufficiently delicate to distinguish the finer variations in these processes which may be met with in different individuals of apparently normal type. With the rise of an exact pathology, too, and a more accurate understanding of the immediate causes of disease attention came to be concentrated chiefly on the exciting agent in morbid processes to the neglect of the "soil" on which the disease is implanted. Here, also, there has been a decided reaction in the last few years.

I think, therefore, that one may profitably make the attempt to inquire into the question of constitutions, not from the external or anatomical point of view,[1] but by considering what are the possible variations in the mode of working of the machine which are yet within the limits of health—that is to say, into the essence of physiological personality.

It will be obvious that such variations may affect either the vital working of the machine as a whole—i.e., its metabolism, or they may be found in the functional capacity of its parts—i.e., the viscera.

Individual Variations in Metabolism.

There may be individual differences: (1) in the total amount or rate of tissue change in the body, or (2) in the nature of the by- or end-products of katabolism. The former one may speak of for convenience as quantitative and the latter as qualitative differences.

(1) That the rate of metabolism, and in consequence the total turnover of material, varies in different individuals admits of no doubt. In part such differences may be explained by variations in anatomical personality—i.e., by differences in shape and build.[2] The larger the surface of the body relative to its bulk the greater is the amount of heat loss and the greater therefore the demand for heat production in the chemical regulation of the body temperature. It is for this reason that tall men (who have relatively a large surface) have difficulty in storing fat. Children, also, who have a large surface in proportion to their bulk, have an active metabolism for the same cause. Apart from gross anatomical differences in build and shape, however, there can be no doubt that the "make-up" of the body varies greatly in different individuals and has a profound influence upon general metabolism. Where the muscles are large and well developed, for instance, the amount of oxidation is certainly greater than in cases in which a large mass of the body is composed of a comparatively inert material such as fat.

The amount of fluid in the tissues, too, probably exerts an influence, and there is no question that this varies not only in different individuals but in the same individual at different times.[3] In cases of cachexia and in old age it is well known that fluid in the body is increased at the expense of fat, but apart from such instances as these, everyone must have seen patients who could not be described as œdematous but who have yet lost an enormous amount of weight after the establishment of a profuse diuresis. It seems certain, indeed, that individual differences in the weight of the body are more often dependent upon fluctuations in the amount of fluid it contains than is generally realised, and it is inconceivable that such differences should be without effect upon metabolism, whilst there is some clinical reason for believing that they also influence the capacity for resistance to acute infections. The drier the body the greater the resistance appears to be. In other cases the greater activity of metabolism is due probably to an unusul degree of vital activity in the cells composing the body. Young cells have more vitality than old, and as age increases the physiological personality tends to change in a direction of a slowing of metabolism.

A very important influence on the general rate of metabolism is certainly exerted by "internal secretions," particularly by the thyroid secretion which is the most potent stimulant of general metabolism we know, although other internal secretions, especially those of the reproductive organs, also seem to exert a profound effect. The powerful influence of the thyroid is shown in the general diminution of oxidation in cases of myxœdema, and it is probable that there are very many cases in which the thyroid secretion, though not altogether absent, is being produced in insufficient amount. It is not unlikely that the tendency to put on fat after middle life which so many people exhibit is to be attributed to a waning activity of the thyroid, and cases of so-called "endogenous" obesity (i.e., those in which fat is stored up even on a diet of low caloric value) may have a similar origin.

There is yet another factor in producing variation in general metabolism which cannot be ignored, and that is the influence of the nervous system. It seems clear that impulses emanating from the central nervous system exercise a control over the nutrition of the tissues possibly by restraining katabolism. The best example of this is seen in the rapid wasting of muscles which are cut off from their connexion with the spinal cord, and if this "grip" of the nervous system on the tissues varies in different individuals, as it may do, metabolism and nutrition are bound to be affected. In all these ways, then, and doubtless in others, the general rate or amount of metabolism may vary and the physiological personality or constitution of the individual be influenced.

How differences in "constitution" which result from these variations in metabolism affect health or individual liability and reaction to disease we do not by any means fully know, but it is certain that they cannot be left out of

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* A lecture given to the Cambridge University Medical Society, February, 1928.

[1] An elaborate study of the relationship of anatomical personality (human morphology) and disease has been begun by Dr. George Draper in America (Human Constitution. London and Philadelphia: W. B. Saunders Company. 1924), mainly on anthropometrical lines. He proposes to extend his investigations later to the study of physiological, immunological, and psychological characteristics.

[2] Dr. C. J. Macalister has made the interesting suggestion (THE LANCET, 1924, ii., 533) that some metabolic peculiarities in individuals may be due to a partial reversion to an ancestral type of metabolism—carnivorous or herbivorous, as the case may be.

[3] Czerny applies the term "hydropic constitution" to the tendency shown by some children to hold back fluid in the tissues; and MacAuliffe suggests that, since biochemically all living things are colloidal structures, their form is perhaps determined by their power of water-absorption and retention, or, as he calls it, "hydrophylly." Those creatures that are built on ample lines and are cubic in form may be regarded as positively hydrophyllic, whereas the angular and lithe are negatively hydrophyllic. (E. Miller.)

account. On the whole, one might expect that an exceptionally rapid metabolism would lead to impairment of nutrition with all its consequences, whilst an unusually slow rate of tissue change—a retardation of metabolism as Bouchard called it—would favour the production of obesity with all its disadvantages, and might induce also the imperfect carrying out of the final stages in the disintegration of some of the products of metabolism with the liberation of abnormal constituents into the blood stream which in their turn might result in various forms of disease such as gout. Whether variations in the general rate of metabolism affect the power of withstanding disease it is difficult to say, but it seems reasonable to suppose that an active metabolism makes for vigour and resistance. It is interesting in this connexion to remember that part at least of the beneficial effects of "open-air" treatment is now ascribed to the stimulation of general metabolism which it brings about.

Apart from variations in total metabolic activity, there exist undoubtedly what one may speak of as qualitative differences in the metabolic processes of the body. As Sir Archibald Garrod, who has devoted a great deal of attention to this subject, has pointed out, it is not likely that alternative paths exist for katabolism, but when abnormal end-products appear it is more probable that they simply represent an arrest at some point on the normal downward stage. That an inability completely to carry out certain metabolic processes exists in some individuals is shown by the examples of alkaptonuria, cystinuria, and pentosuria, and doubtless there are kindred abnormalities which we have not yet learnt to recognise. If it be the case, as some believe, that an inability to carry out fully the katabolism of purins is a factor in the production of gout, we have an example of how a variation in physiological personality may actually produce disease, and perhaps an inherent disability in dealing with sugar—hypoglycopyresis as Dr. O. Leyton has called it—may be the foundation of the family tendency to diabetes so often met with. Such qualitative differences in metabolism may also be at the root of idiosyncrasies to certain foods and of the varying reaction in individuals to drugs. There is room, too, for wide differences in chemical constitution in different individuals. The possible variations in the exact make-up of the protein molecule, for instance, are almost infinite and may account for such phenomena as protein sensitiveness and an asthmatic diathesis. The reaction of the body may also vary, and Dr. H. A. Ellis has even made the interesting suggestion [4] that all people can be divided into acid, normal and alkaline constitutions, and that whether an individual be what we call an "acid" or an "alkali" controls both his health and temperament and determines to some extent his liability to disease; an "alkaline" constitution being part of the tuberculous diathesis whilst an acid one predispose to gout. This suggestion certainly opens up possibilities of the most fruitful lines of inquiry.

Physiological personality, however, depends not merely upon the working of the machine as a whole, but upon variations in the efficiency of its component parts, the viscera. I have not time, even if I had the knowledge, to deal fully with this aspect of the subject, but we may glance briefly at some of the factors which may underlie variations in the functional activity of the chief visceral systems in different individuals.

The Digestive Organs.—At the outset we have to consider the possibility that in some persons the digestive apparatus is really too small or ill-developed to supply fully the needs of the tissues in the way of nutrition. I am not aware whether this possibility has ever been the subject of accurate investigation, but we know clinically that persons in whom the lower thorax is contracted so that there is little room for the stomach and liver are peculiarly prone to suffer from functional digestive disorders. In such subjects the abdominal organs are often unduly mobile from maldevelopment of the fixing bands and ligaments with the result that visceroptosis with all its attendant train of disabilities readily ensues. This is an essential part of the "morbus asthenicus," a constitutional peculiarity which almost amounts to a diathesis, predisposing as it does to functional dyspepsia and to neurasthenia. It will be found, I think, that a more or less sheltered life is generally instinctively chosen by such persons, and that on the temperamental side they are apt to suffer from a feeling of "insufficiency." Dr. Parkes Weber,[5] in a paper on Automatic Vital Safety-Valve Actions and Reactions, speaks of such persons as being of a "low-pressure type," and considers that they have a safety-valve which comes into action at low pressure in the form of fatigue, dyspepsia, &c. The robust, full-blooded individual, on the other hand, belongs to the "high-pressure" type and *his* safety-valve only comes into action at high pressure—for example, in the form of hæmorrhages.

Apart from this general disability, which is really a fault of physique, we know quite certainly that in regard to those functions of the stomach which permit of accurate investigation great individual differences appear even within the limits of health. In the case of secretion, for instance, investigation shows that the production of hydrochloric acid is higher in some healthy persons than in others, and that it is higher in the young than in the old. Where the variation is in the direction of an excessive production we have a physiological personality which, as Hurst has pointed out, is certainly predisposed to suffer from a specific form of disease—namely, duodenal ulcer. Take again the other great function of the stomach, the exhibition of muscular tone. Here, also, there are undoubtedly individual variations in efficiency which are probably inborn and persist throughout life. Some people, as is well known, always have splashy stomachs and readily suffer from "slow" digestion with flatulence and other signs of disordered function. Such persons, indeed, make up the larger proportion of habitual functional "dyspetics." Whether this defect of the muscular function is due to congenital feebleness of the muscle itself, to an impaired elasticity, to a defective supply of nervous energy, or of an adrenal hormone is not known, but the marked aggravation of the disorder by fatigue, either mental or physical, points rather to a nervous basis. That, however, is immaterial. The main point is that here again we have a peculiarity of physiological personality which may greatly affect health and liability to disease, and, as we shall see later, the mental characteristics of the individual as well. On the other hand, there may be an inborn exaggeration of tone in the stomach which often accompanies an excess of acidity, the two constituting together the ulcer diathesis.

Passing from the stomach to the other great digestive organ, the pancreas, we find ourselves hampered in studying physiological variations in its activity by the difficulty of investigating the composition and amount of the normal secretion. I would suggest, however, that differences in digestive capacity in different individuals may sometimes be due to differences in the amount or composition of the pancreatic juice. Especially does it seem likely that the congenital inability to digest fats easily may have some such cause. There can be no question that nutrition may be greatly impeded particularly in infancy by this inability and the liability to certain diseases, and in particular to tuberculosis, increased by it. In extreme cases of congenital defect of pancreatic secretion we know that the whole nutrition and development of the body is interfered with and a condition of infantilism may result.

Of variations in intestinal digestion we know even less than we do of the pancreatic, but as regards the other great intestinal function-motility, there seems to be no doubt that great individual differences exist, and that in some persons there is an inborn deficiency of intestinal tone and peristaltic activity which predisposes to constipation with all its consequences, physical and mental. Here, just as in the case of the stomach, it is uncertain how far the deficiency is directly due to the intestinal musculature and how far it is the consequence of defective innervation. Peculiarities of anatomical personality due to differences in the length and fixation of the colon may also contribute largely to such defects of action, as Mr. G. E. Waugh has pointed out.

But of all the abdominal organs it is the liver variations in whose efficiency and activity one might expect to produce the greatest effect on constitution and character seeing that it touches organic life at so many points. It will be sufficient to remind you that the liver is both a glycogen and a fat former, that it removes the disintegration products of the red blood corpuscles, that it is concerned in the final stages of proteolysis, and that it acts as a "portal sentinel," preventing to some extent the passage of injurious substances from the intestine into the general circulation. The efficiency or otherwise with which it discharges these functions is bound to have a far-reaching influence on physiological personality. It has often been suggested that there is such a thing as a congenital "hepatic inadequacy" affecting either the capacity of the liver as a whole (possibly from its being too small for the needs of the organism) or involving one or more of its special functions. The validity of such a suggestion is very difficult to determine, but there is a good deal of clinical evidence in favour of the view that the gouty diathesis may depend in the last resort upon a relative incapacity on the part of the liver, and that liability to such conditions as "bilious attacks," migraine, and cyclical vomiting may have a similar origin. The recent introduction of tests for estimating the efficiency of the liver may enable us to acquire a further insight into individual variations in function and into the so-called hepatic inadequacy.

[4] Reaction in Relation to Disease. H. K. Lewis and Co., Ltd. 1924.

[5] Med. Press, 1917, clv., 83.

The Circulatory System.

That the efficiency of the heart is greater in some individuals than in others is certain. It has long been known, for instance, that the size of the organ is by no means the same even in normal subjects, and Dreyer has shown that variations in this respect are related to differences in the extent of body surface. The larger the surface area the greater is the size of the heart for, as we have already seen in another connexion, a large surface means a great heat loss, and this in its turn necessitates an active circulation and throws more work upon the heart. This is really a question of anatomical personality, but it is reasonable to suppose that a heart which, even to meet the normal physiological requirements of the body, requires to be above the average in size must have less margin for hypertrophy to meet unusual exigencies of stress or disease. Hence in this respect, just as in the maintenance of body temperature and nutrition, the possession of a relatively large body surface is a handicap and a source of weakness in the "constitution." Apart from the question of size there is scope for considerable variation in the various physiological properties of the heart muscle—in excitability, conductivity, contractility, and tonicity—and there is room, too, for much latitude in the degree of control exercised by the nervous system over the organ.

Although we are not yet in a position to test the efficiency of each function of the heart in any given individual, there is ample evidence of considerable variations in their working, and it is not surprising that scarcely two individuals give identical electrocardiograms. Individual differences in the frequency and force of the pulse and the occasional occurrence of habitual irregularity of the heart throughout life are further examples of such evidence. It is common knowledge, too, that the degree of cardiac acceleration in response to the same amount of physical effort and the subsequent decline of rate vary materially in different individuals. This "lability" of the heart's action may be regarded as a sign of a neurotic constitution. It is when the heart is subjected to unusual stress and strain, however, that inborn variations in its efficiency become manifest. One person, for instance, may pass through an excessive physical effort with impunity which in another induces serious distress. Here we are probably dealing with congenital differences in tonicity which we have already seen play such a large part in the relative efficiency of the stomach and intestine, but whether these differences are structural—i.e., essentially anatomical (due, for instance, to a deficiency of elastic tissue) or "vital" in origin we are not yet able to say. That the efficiency of the myocardium is a large factor in physiological personality, however, is certain, and it determines to a great extent the capacity of an individual to stand physical strain or the stress of an acute illness, and it will be found, I think, that people who are handicapped by these congenitally inefficient hearts instinctively avoid violent exertion. A large number of the recruits who broke down in the war with heart troubles (D.A.H., and so forth) probably belonged to this class. Like the heart the blood-vessels, too, exhibit a varying capacity to stand strain and wear and tear which is probably due to inborn differences in the elasticity of the vessel wall—to the quality of the "tubing" as Osler put it. How greatly such differences affect constitution is recognised in the saying that a man is as old as his arteries.

Variations in blood pressure in different individuals also play a large part in determining differences in constitution especially as life advances. The tendency to develop high tension in later life which is characteristic of some individuals and even of families is probably not due to any peculiarity of the vessels themselves, but a secondary result either of some metabolic error, of "renal inadequacy," or possibly, of over-secretion on the part of the suprarenals, but however brought about it is a constitutional peculiarity which it is of the greatest importance for the physician to recognise. It has been described by Hurst as a hyperpietic diathesis.

Lastly, there seem to be considerable differences in the vasomotor control of the blood-vessels in different individuals which determine the existence of a "good or "bad" circulation with consequent varying capacity to stand the effects of cold and varying predisposition to such disorders as chilblains, Raynaud's disease, migraine, &c. When the control of the splanchnic system is inherently defective, the blood pressure varies greatly with the position of the body, fatigue seems to be badly borne, and pooling of the blood in the splanchnic area with consequent faintness is readily induced. Differences in vasomotor control may also perhaps be at the root of the varying susceptibility of different people to barometric pressure and electrical conditions of the atmosphere—to "weather" in fact.

The Blood.

Individual peculiarities of the blood have not been much studied, but several are at least conceivable. In the first place, the total volume of the blood may vary in the direction of true plethora—the sanguine temperament of the older writers. The number of red and white cells per cubic millimetre, is also to some extent a variable quantity, and so, within certain limits, is the relative proportion of the different white cells and the percentage of hæmoglobin, some people having all their lives a slightly chlorotic blood. The destructibility of the red cells, too, is in all probability different in different persons. In extreme cases, as in family jaundice, there is such an unusual inborn fragility of the red corpuscles that visible pathological effects are produced, but such a condition is compatible with long life and comparative health, and in its slight degrees might remain unnoticed though it would certainly predispose to anæmia. Little as we know of these grosser histological variations in the blood we know even less of individual differences in its chemical composition, although the possibilities in this direction are almost infinite, for it must be remembered that all personal peculiarities of metabolism must be reflected in it. Recent investigations, however, have shown that while the total nitrogen, non-protein nitrogen, and sugar in the blood vary in the same individual from week to week there is a tendency for the level of these variations to be individual and the sum of the average deviations of the constituents may be an index of the metabolic stability of that person. The absolute amount of creatinine also is a constant for the individual.

In hæmophilia, again, there appears to be an inborn defect in the prothrombin, and it is possible that lesser degrees of this may determine a greater or lesser tendency to bleed easily in normal persons. Further, the amount of cholesterol in the blood seems to vary in different people, and Parkes Weber has suggested that there may be a constitutional hyper- or hypo-cholesterolæmia which may determine the individual's liability or otherwise to suffer from certain diseases, hyper-cholesterolæmia being a part of the gall-stone "diathesis"—i.e., that sort of constitution which predisposes the person to suffer from gall-stones and (probably) from other disorders as well. Lastly, there can be no doubt that there are wide individual variations in natural immunity of which the blood is the vehicle. This has been shown, amongst other ways, by the results of the Schick test for diphtheria.

Respiratory System.

The chief individual variations in the respiratory system that we can recognise are differences (1) in the vital capacity, and (2) in the elasticity of the lungs. The former is capable of exact measurement and has long been known to vary greatly in different persons depending upon the size and shape of the chest and the elasticity of its wall. Defect of vital capacity is well recognised as a serious constitutional handicap, lessening fitness for undergoing some forms of exertion and predisposing to pulmonary tuberculosis. It is really, however, an affair of physique. An inborn deficiency in the elasticity of the lungs or an undue tendency for impairment of elasticity to set in as age advances seems to play a part in the production of emphysema and may seriously interfere with activity and ultimately shorten life. It may be compared to the congenital deficiency of elasticity and "wearing" power in the walls of the blood-vessels to which reference has already been made, and with which indeed it is often associated. The excitability of the respiratory centre seems also to vary in different persons, and Hurst suggests that an inborn exaggerated irritability of the bronchial centres is an essential element in the "asthmatic diathesis."

The Excretory Organs.

Of individual variations in activity of the organs of excretion—the skin and kidneys—and of the degree to which such variations may affect physiological personality we know very little. It is true that the texture and so forth of the skin may determine its liability to disease, but that is really a matter of anatomical personality. We know that the cutaneous secretory activity varies greatly in different individuals, but the effects of this on constitution and temperament are not so obvious. Persons with sluggish skins are, one should suppose, constitutionally unsuited to live in tropical climates, and it has also been suggested that habitual inactivity of the skin throws more work upon the kidneys and constitutes to some degree a "renal diathesis." All this, however, is rather speculative.

Variations in the perfection of the kidney functions must be of much more significance than kindred variations in cutaneous efficiency; but of these also we know very little. We know, however, that the acidity of the urine varies greatly in different persons partly as a reflection of metabolic peculiarities and partly as the result of variations in concentration which are dependent upon the greater or lesser functional activity of the skin, and it has been shown by Osman that a high acidity of the urine predisposes to the development of nephritis whilst it also favours the appearance of some forms of calculus. The application of the now existing tests for renal efficiency to large numbers

of "normal" individuals should throw light on physiological variations in kidney function, and enable us better to recognise constitutional peculiarities and weaknesses which may render the subject of them liable to disease.

The Ductless Glands.

Variations in activity of the different ductless glands no doubt play a large part in determining both anatomical and physiological personality, but so much has been written on this subject in recent years that I need not refer to it at any length. We know, for example, how variations in pituitary activity may influence growth and fatness, how the thyroid affects metabolism, how the parathyroid regulates the calcium exchanges and through these the irritability of the nervous system, how the adrenals and gonads determine the degree of virility, and so on. There can be no doubt, too, that there is room even within the limits of health for wide variations in the activity of individual endocrines, and that such variations must profoundly affect "constitution." None the less I think the tendency at present is to exaggerate the part played by the ductless glands, or perhaps I should say to assign to them an independence and initiative which they may not possess. To take an example: adrenal dominance is said to produce an individual of the virile, "live-wire," "quick in the uptake" type. Even granted that such individuals have unusually potent adrenals—and this cannot be said to be really proven—the question arises, is the adrenal dominance primary or is the overactivity of the gland determined by the nervous system?

Which is master, the endocrines or the brain? This question is really fundamental, for it applies not only to the relation between the nervous system and the endocrines but to the relation between the nervous system and the functional activity of all the viscera. It is possible, in short, that in the last resort most differences in *physiological* personality are nervous in origin, even although gross disease in a ductless gland may produce a primary but pathological change in the constitution. In health, in a word, the endocrines are perhaps the servants of the central nervous system: if they take command disease results. To this point I shall return again later.

The Nervous System.

That there must be great variations in the working of the nervous system is obvious from the striking differences in intellectual capacity in different individuals, and some of these variations are capable of exact measurement in the psychological laboratory. Variations in attention, memory, and reaction time are examples, although these affect character and intellect more than constitution. There are also differences in the "rhythm" of the motor processes, for instance the rate of walking, or of performing muscular acts natural to any given individual. These probably depend upon the "neuronic patterns" peculiar to the particular brain. Berry, in a paper on the Physical Basis of Social Inefficiency,[6] points out that the most superficial layer of cortical neurons is the latest to appear in evolution and that its depth varies greatly in different individuals. He considers that social efficiency depends in great measure on the degree of its development. "The problem of the range of variation and of the limits of normality," he says, "is an extremely important one in all biological processes and does not appear to be fully realised by the medical profession"

From the point of view of "constitution," however, one of the most important differences affecting the nervous system is what one may speak of as "fatiguability" or liability to exhaustion of function, which perhaps depends upon inherent stability or otherwise of the molecules of the nerve cells. A stable nervous system confers vigour upon the constitution whereas one which is easily fatigued predisposes to neurasthenia and functional disorders, although not, perhaps, to serious disease. There seem, also, to be degrees in the efficiency of the barrier which the nervous system sets between conscious life and that of the viscera, a low degree of such efficiency disposing to hysteria and psychasthenia.

It must be remembered, further, that in consequence of the control which it exerts over the viscera and possibly, also, over the nutritive processes, and in virtue of its integrative functions largely exercised through the endocrine system, the nervous system may be responsible for variations in physiological personality which are not at first sight likely to be attributed to it, as it acts indirectly by affecting nutrition, the functions of the heart and stomach, the blood pressure, and so on. As is well known, Dr. Eppinger and Dr. Hess originated the theory, which has since met with pretty wide acceptance, that the relative degree of control or influence of the vagal and of the sympathetic parts of the vegetative nervous system differs in different individuals, and that people may be roughly divided into vagotonics and sympathicotonics according to which nerve influence preponderates in their visceral control, vagotony being regarded as a form of constitutional inferiority.[7] There can be little doubt, I think, that this conception has been overdone and has been made to cover too wide a clinical field, but there is equally little doubt that "there is something in it," and that some facts of physiological personality may find in it their explanation. In the long run, perhaps, all variations in visceral function in different individuals which cannot be attributed to actual differences in structure may really be due to variations in nervous control. From this point of view the ultimate seat of physiological personality would be in the central nervous system. This need not be surprising if one remembers that the human central nervous system is the last product of animal evolution, and that variations in it are necessary in order to afford an opportunity for the play of natural selection.

We may now pass on to consider the ways in which physiological personality may determine "temperament" and character.

Influence of Physiological Personality on Character.

There can be no doubt that a man's character is largely dependent upon his physical constitution. This is certainly the case so far at least as several important elements of character are concerned, such as energy, courage, vivacity, and good temper, although as regards some of the finer elements, sympathy, sincerity, and so forth, the physical basis may not be so obvious. "Yet it does appear to me" said Sir Walter Scott, "that high and independent feelings are naturally though not uniformly or inseparably connected with bodily advantages. Strong men are usually good-humoured, and active men often display the same elasticity of mind as of body," and, to quote Mr. H. G. Wells, it may be that, "even the capacity for friendship is a question of physique."

Much might be said even of the influence of gross anatomical peculiarities upon character. What, for instance, is the effect of stature upon mental traits? Is the big man more equable and large minded, less excitable, fussy and self-assertive than the smaller man? Or was Bacon right when he said, "that Nature did never put her precious jewels into a garret four stories high and therefore exceeding tall men have ever empty heads," or quaint Thomas Fuller, when he expressed the same idea in very similar language, "Often the cock loft is empty in those whom Nature hath built many stories high." ? I hope not. Or had George Eliot any reason for her belief that red hair and brains never go together?

Herbert Spencer, in an interesting chapter of his Autobiography, ventures the opinion that much might be said about the mental effects of bodily deformity. One, he suggests, who knows that he is looked upon by others with disfavour or pity cannot help being in some measure soured, or if his deformity is of such a nature that he cannot join in the pursuits of normal men he may become the prey of envy. In present-day language he is said to suffer from an "inferiority complex." Again, is shyness not often the consciousness of some physical shortcoming, such, for example, as a pronounced squint or stammer? One might elaborate the argument at length, but we are concerned at the moment more with the influence of physiological than of anatomical personality on character, and it is this aspect of the subject that I wish now to consider.[8]

[6] Brit. Med. Jour., 1921, ii., 72.

[7] According to Eppinger and Hess, the vagotonics are tall, thin, and angular, with a tendency to sweaty and greasy skins, acneiform eruptions, cold extremities, and mental hebetude. Sympathicotonics, on the other hand, have dry skins, prominent eyes, and dilated pupils. They are less torpid than the vagotonics, and in extreme cases are given to excessive activity. The activity of the thyroid and suprarenal systems being heightened there is a more rapid response to external demands than in the vagotonics. Most persons, of course, present a balance between sympathicotonia and vagotonia, the two systems being in antagonism. Apart, also, from complete types of the two (which some authorities deny to exist at all) there is no doubt that the same organ may in different persons be predominatingly under vagus or sympathetic influence respectively, and that the liability of the organ to functional disorders may depend upon which influence preponderates.

[8] An elaborate study of the relation of anatomical personality to character has been published by Kretschmer (Physique and Character. Kegan Paul. 1925). He describes three leading types of physique, the asthenic, the pyknic, and the athletic, and attempts to correlate these with two main types of temperament, the cyclothymic—characteristic of the pyknics—and the schizothymic which prevails in the asthenic and athletic anatomical types. The cyclothymes are the ego-centrifugal; the schizothymes are ego-centripetals with a great disparity between the life of thought and that of feeling. From the psychiatric point of view the pyknics make up most of the manic-depressives; the asthenics and athletics most of the schizophrenics. Kretschmer's study is interesting, but it is based on a limited material observed amongst the insane, and many of his conclusions and distinctions seem far-fetched and artificial, whilst his terminology is needlessly obscure.

Let us look first at the temperamental influence of different types of metabolism. Just as a large total metabolic turnover indicates a high degree of vitality of the cells so also it probably predisposes to a high degree of mental energy. One has merely to consider the mental sluggishness of the subject of myxœdema—an extreme example of abnormally slowed metabolism—to be convinced of this. An active metabolism, in fact, seems to be associated with energy of will, high animal spirits and restlessness, whilst a slow metabolism goes with the reverse qualities. Again, the type of metabolism which predisposes to gout—the "acid" type of Ellis—goes often with a forceful and irritable character and high intellectual capacity. Hence gout has been described as "dominus morborum et morbus dominorum"—whilst the type predisposed to tuberculosis—the "alkaline" type—is accompanied by an imaginative and emotional—in a word by the "artistic" temperament.

Close, however, as the relation between metabolic type and temperament no doubt is, the relation between visceral function and character is probably even closer. As Herbert Spencer said: "Mind is not as deep as the brain only, but is, in a sense, as deep as the viscera." Feeling-tone, a sensation of well- or ill-being, of exaltation or depression, depends largely upon sensations derived from the activity of the viscera, which sensations, however, are normally outside consciousness except for the feeling-tone they engender. (Head.)

The abdominal viscera seem to be of predominant importance in this respect. Congenital feebleness of the digestive apparatus may lessen mental energy or at least impair cheerfulness and sociability. Dysentery saps the courage of an army, and as that wise physician and philosopher, John Locke, said, "People who have relaxed bowels have seldom strong thoughts." The relation of the abdominal visceral functions to mental and emotional states is so well recognised popularly as to have become proverbial. Thus we speak of a person as having "no stomach" for a thing, meaning that he lacks courage for it, or, more colloquially, he is said to be lacking in "guts." "Girding up the loins" is synonymous with screwing courage to the sticking place, whilst the mental depression associated with defective action of the liver is recognised in the well-known facetious reply to the old question, Is life worth living?—"it depends on the liver."

Peculiarities in the working of the circulatory apparatus might be expected to influence temperament by affecting the circulation through the brain. Oliver Wendell Holmes said, that "courage was an affair of the diameter of the carotid arteries," and anything which impedes the flow of blood to the brain seems to lessen it, thus the hunting man with early cerebral atheroma begins to "funk" his fences whilst the financier loses nerve for his speculations. The delirium that accompanies a failing heart is, as Head points out, an extreme example of a mental change dependent directly on altered vascular conditions. On the other hand, so good an observer as Sir William Broadbent found no constant relation between the pulse and temperament. "Speaking generally," he wrote, "I have found physical strength, energy and endurance, impartially associated with small low tension pulse, and with large arteries and high tension, and the reverse. I can say the same of intellect, perseverance, courage and force of character generally: they appear to be absolutely independent of circulatory conditions."

Imperfect purification of the blood from defective action of the kidneys may also influence the brain and through that the whole temperament. We see this in an extreme degree in cases of uræmia, and in a lesser measure it may occur even in conditions short of disease. As Dr. Harry Campbell has said, "If two persons were to exchange bloods they would, in large measure, exchange temperaments."

Fully to consider the relation between variations in the functional activity of the nervous system and character would take us too far afield and would involve a discussion of the whole relationship of mind and body. How profoundly, however, an alteration in the state of the nervous system affects temperament may be seen in the changed personality witnessed in neurasthenia, and in general paralysis or even more dramatically in the deterioration of the moral character which sometimes follows an attack of lethargic encephalitis. A difference in the rate of the nervous processes, too, must influence capacity both in the physical sphere as in "striking" a fish and in the purely mental domain as in grasping an opportunity. Again, a predominance of sympathetic control is believed to produce an energetic, adaptable type of character, whereas when the para-sympathetic has the upper hand a slower and more sluggish type results. It may be contended,[9] however, and I think with truth, that it is chiefly the intellectual side of character which is directly affected by nervous action and that its finer moral qualities are largely independent of the physiological personality.

Nor can we leave out of our survey the influence on temperament of variations in "endocrine personality," but our ignorance here is so great that it is unwise to be dogmatic. There can be no doubt, however, that variations in the activity of the organs of internal secretion may exert a profound influence on character, though it is probably an exaggeration to speak of them as Berman does as "The Glands regulating Personality," or like another author, as "The Glands of Destiny," and to assume that all temperamental differences can be traced back to this origin.[10]

We must beware of too mechanistic a view. It may be true that the thyroid is our carburetter, the adrenals our magneto, and the central nervous system our steering-gear, but there is a god in the car all the same, call it "will," "psyche," "soul," or what you please, who has a large measure of control over the whole mechanism and upon whose nature much the most important part of character depends.

In conclusion, if there be any truth in what has been said, its recognition should at least save us from what someone has spoken of as "the commonest fault of the prescriber—the easy-going habit of assuming that every one is alike." It should convince us that although men may be born free, as the preamble to the American Constitution states, yet they are not born in any physiological sense "equal"; that man is not one but a diversity of creatures. It should impress upon us the futility of trying to lay down "rules of health" applicable to everyone and the duty of teaching each of our patients how to manage his own machine so as to get the best out of it, remembering that there are self-made men physically as well as financially. Finally, it should uplift us as doctors with the thought that in so far as we are able to modify or correct defects in the physiological personality we may influence character, and in so doing become active co-workers with those moral and spiritual forces which mould mankind.

[9] William James was of opinion that where the character, as distinguished from the intellect, is concerned, the causes of human diversity lie chiefly in differing susceptibilities of emotional excitement and in the different impulses and inhibitions which these bring in their train. It may well be, however, that emotional susceptibility depends in its turn on the character and balance of the endocrine and vegetative nervous systems.

[10] Over-action of the suprarenals, for instance, seems to be associated with a virile character, but with a dominance of fear in the temperament and a liability to the occurrence of phobias and anxiety states. Under-activity, on the other hand, is associated with a general feebleness of character. An active thyroid is believed to conduce to creative activity and to be the basis of what is called the "artistic" temperament, whilst pituitary activity and musical or mathematical ability are said to go together. Much of this, however, is highly speculative.

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THE Academy of Medicine of Jerusalem is a society of medical practitioners formed to unite, on common basis of scientific interests, professional men who might otherwise remain far apart. The 45 members speak at least ten different languages, and come from many different training schools. The successful publication of the first annual bulletin is proof, therefore, of a triumph of tact and perseverance over many obstacles. It contains a brief résumé of the year's proceedings, which included 11 scientific meetings and a dinner. Among the papers read at these meetings and published here in abstract were several on Typhoid in Palestine, one on Blindness in Palestine, and others on the Plague, Goitre, and Collapse Therapy in Pulmonary Tuberculosis. We wish the Academy of Medicine in Jerusalem every success.

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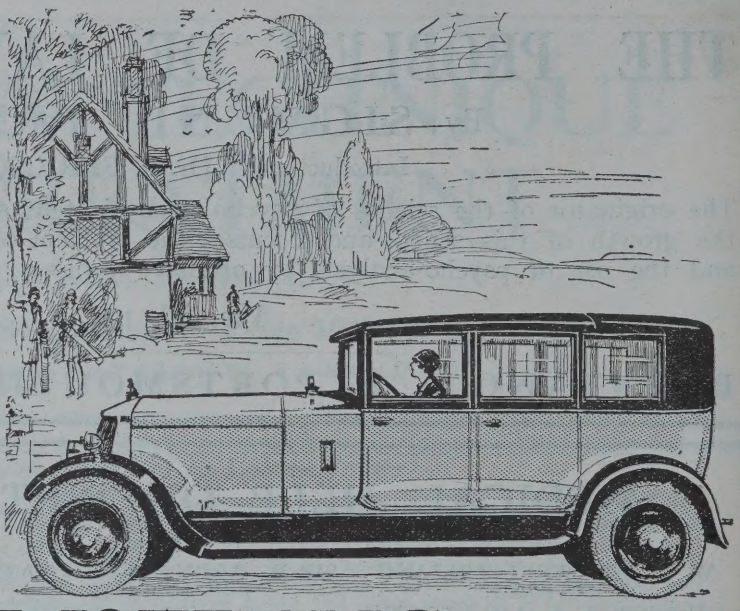

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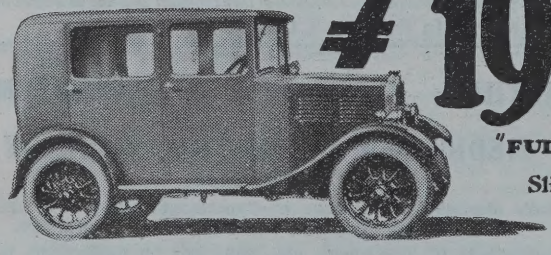

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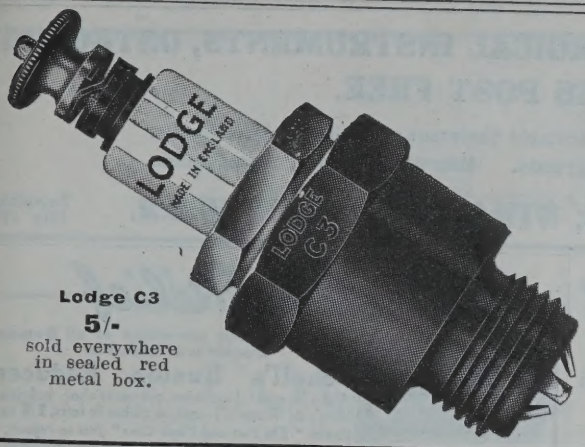

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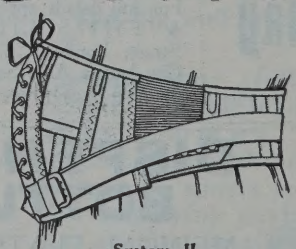

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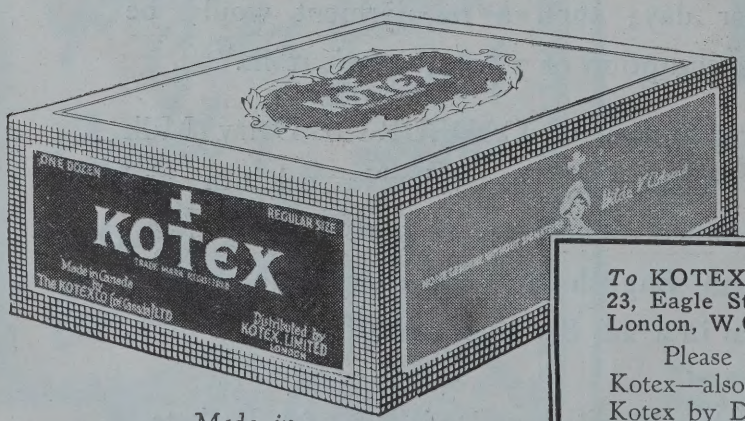

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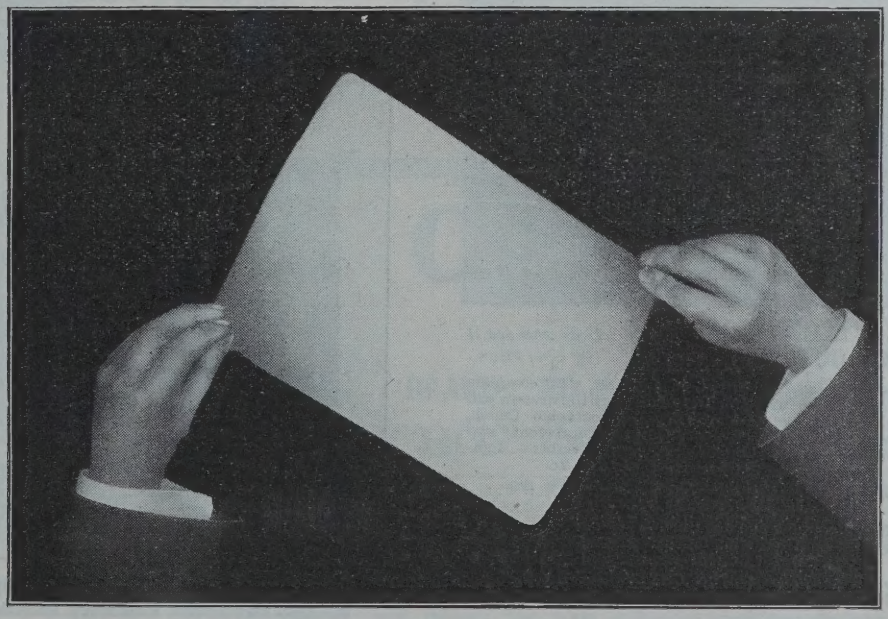

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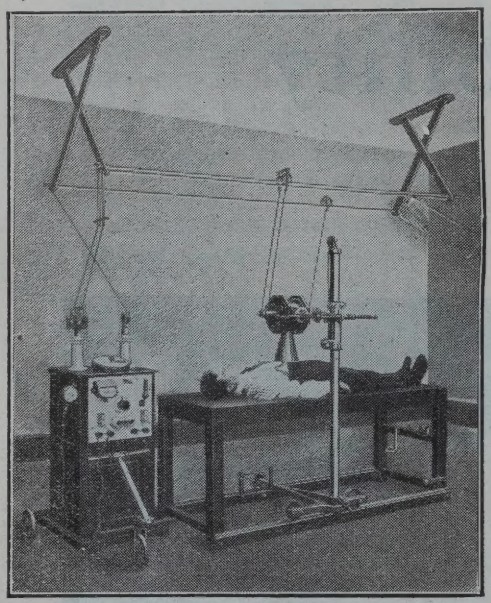

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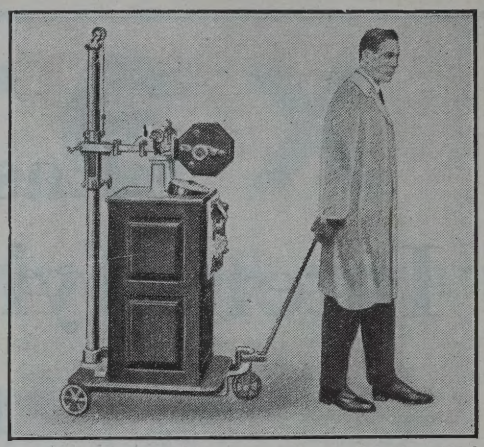

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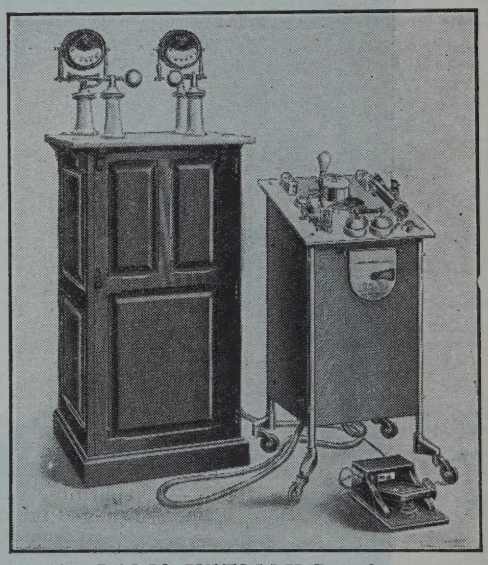

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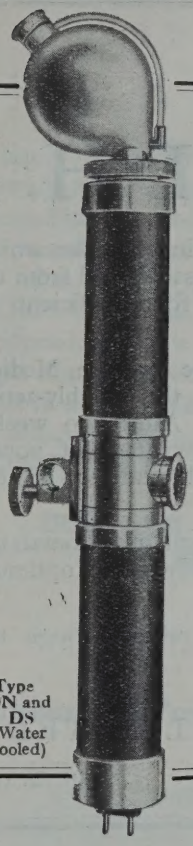

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A liquid preparation of the Hypnotic Barbitone or Diethyl-barbituric acid has long been desired as a useful means of procuring sleep. When given in reasonable doses it is claimed that it does not produce any toxic symptoms whatever, nor cumulative in action, and in ordinary cases of insomnia one fluid drachm of VERONIGEN is sufficient dose for an adult. As a preventive of post-operative vomiting, one to two fluid drachms of VERONIGEN may be given one and a half to two hours before general anæsthesia is produced, and as a result much less of the anæsthetic is required. As BARBITONE has a slight diuretic action, the mixture can be used more safely than other hypnotics when the heart is weak. Where sleeplessness is a concomitant of pain, rest and relief can frequently be obtained by the administration of one drachm of VERONIGEN and two drachms of ELIXIR ACID. ACETO-SALICYLIC (Hewlett's).

DOSE FOR ADULTS.—One fluid drachm diluted, one hour before going to bed.
For Nervous Sleeplessness in Children.—10 to 20 minims diluted.

VERONIGEN. Price **10/6** per lb.

Introduced and Prepared only by C. J. HEWLETT & SON, Ltd.,
Wholesale and Export Druggists,
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A PALATABLE CONCENTRATED EXTRACT OF LIVER

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The 8-oz. bottle containing the equivalent of 64 oz. Fresh Liver is sufficient for eight days' treatment in cases of pernicious anæmia.

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For Ill Conditions of the Gastric Tract

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Colloidal Hydroxide of Aluminium

"Alocol" is the practitioner's safeguard when alkaline medication is indicated. Its clearly defined antacid properties exceed those of bicarbonate of soda, magnesia and subnitrate of bismuth; furthermore, "Alocol" eliminates all the unpleasant drawbacks which are particularly feared with the usual alkalis and oxides.

When "Alocol" reaches the stomach adsorption takes place; a colloidal jelly is formed, which adhering to the walls of the stomach, diminishes their sensibility. The excess of hydrochloric acid is absorbed, but the acid reaction necessary for peptic digestion remains normal.

The advantages of "Alocol" are therefore manifest. It neither hinders proteolysis nor causes destruction of any food element or factor. Prolonged exhibition interferes in no way with the normal putrefactive function of the gastric juices or with the regular processes of nutrition.

"Alocol" is regarded as a specific in the treatment of hyperchlorhydria, whilst for all forms of fermentative dyspepsias with gastro-intestinal flatulence, acid eructations and other symptoms, common to gastric disease its influence is beneficial to the highest degree.

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Special Indications for Testogan.

Sexual Infantilism and Eunuchoidism in the male. Impotence and sexual weakness. Climacterium virile. Neurasthenia, hypochondria.

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In ampoules for intragluteal injection, also in tablets.

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In 7½ grain Tablets.
With Aspirin
5 grains Atocin,
2½ grains aspirin.

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Gout, Lumbago, Neuralgic and Sciatic Conditions respond favorably to the acidum phenylcinchoninicum product: Atocin. Unsurpassed for pain-relieving qualities and as a uric acid eliminant.

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In the Correction of Sexual Disabilities

particularly when associated with nervous phenomena, has proven of more than ordinary worth.

Under its use the appetite improves, sleep becomes more normal, the gastro-intestinal function more regular and depression lessened.

The sexual function takes on added vigour, and the patient by degrees finds himself more capable of discharging his usual duties.

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This RELIABLE PREPARATION is still held in high esteem by medical practitioners who have been employing it for many years past.

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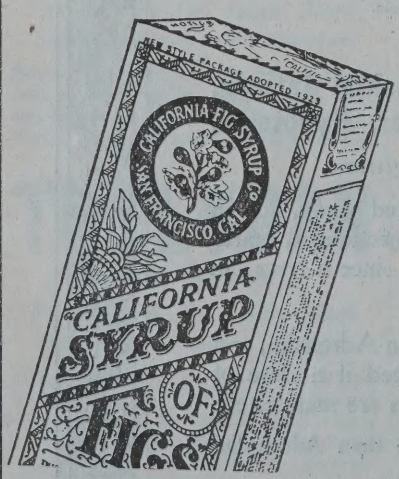

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The dose is easily adjusted to the needs of the individual and will be found uniformly effective when prolonged use of a laxative is necessary.

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In bottles of two sizes : 1/3 and 2/6

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Ephedrine is an alkaloid obtained from the Chinese plant Ma Huang ⟨Ephedra⟩. Clinical trials have proved its value in cases of

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Clinical reports also indicate its value in the prevention of fall of blood pressure in spinal anæsthesia and in influenza and pneumonia. Ephedrine is useful also in ophthalmia for the production of mydriasis.

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It is important that Ephedrine should be pure and free from the alkaloid pseudo-ephedrine.

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is made in the B.D.H. laboratories from Ma Huang, imported by The British Drug Houses Limited, by a special process which ensures absolute freedom from every impurity, including pseudo-ephedrine.

It is issued in tablets for oral and hypodermic use and in solution for hypodermic, intramuscular and intravenous use.

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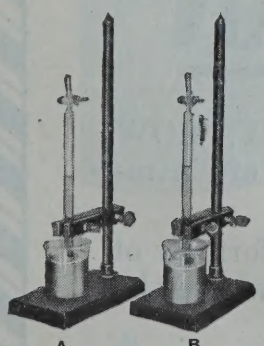
(Trade H_2O_2 12V Mark)

means Stable Hydrogen Peroxide



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Showing volumes of Oxygen liberated by (A) "Dioxogen," and (B) the same quantity of a fresh sample of ordinary Hydrogen Peroxide (10 volumes).

The merits of nascent oxygen as an antiseptic are too well known to require reiteration. The difficulty lies in obtaining a convenient and reliable source and, while Hydrogen Peroxide is most convenient in use, the unreliability, both in strength and in keeping properties, of the ordinary commercial product seriously limits its utility in practice.

"DIOXOGEN" definitely overcomes this disadvantage. Its stability is remarkable. It can be boiled or frozen without impairment of therapeutic power and, even after being kept for long periods, will yield its full volume of oxygen. This dependability of "Dioxogen" is well exemplified in the accompanying illustrations.

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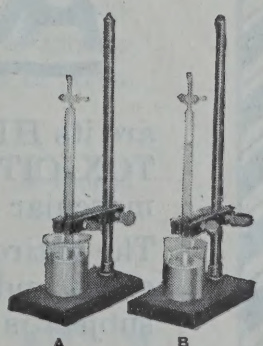

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Showing volumes of Oxygen liberated by the same quantity of (A) "Dioxogen" and (B) Hydrogen Peroxide (10 volumes), both having been kept for the same period.

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during which there has been considerable disturbance of metabolism, recovery frequently "hangs fire".

This is often due to an inadequate supply of the "chemical foods", calcium, sodium, potassium, manganese, phosphorus, and iron. These, together with the "dynamic" effect of small doses of quinine and strychnine, usually overcome such physiological inertia.

Compound Syrup of Hypophosphites

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is the ideal form in which to administer the above, being bland, stable, non-irritating and efficient, to which 60 years of increasing use bear witness.

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are its HIGH THERAPEUTIC ACTIVITY, LOW TOXICITY, and the PAINLESSNESS of intra-muscular or subcutaneous injections.

The entire absence of local reactions, its uniformity of effect, and its safety recommend it in cases where the subject is intolerant of arsenic.

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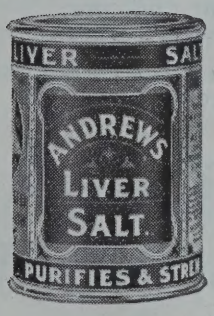
In those rheumatoid and fibrositic conditions consequent upon septic absorption, especially where the bowel has become infected, a large teaspoonful of Andrews Liver Salt taken in a tumbler of either warm or cold water each night at bedtime, will be found a most excellent adjuvant to vaccine treatment.

In such conditions it is absolutely essential to prevent faecal stagnation, and it is imperative that the contents of the bowel should be removed at least daily.



Dose: One-half to three teaspoonfuls, according to requirements, in a glass of water.

An 8-oz. Tin sent free on request.

Andrews Liver Salt

SCOTT & TURNER LIMITED, Works and Laboratories at Newcastle-on-Tyne

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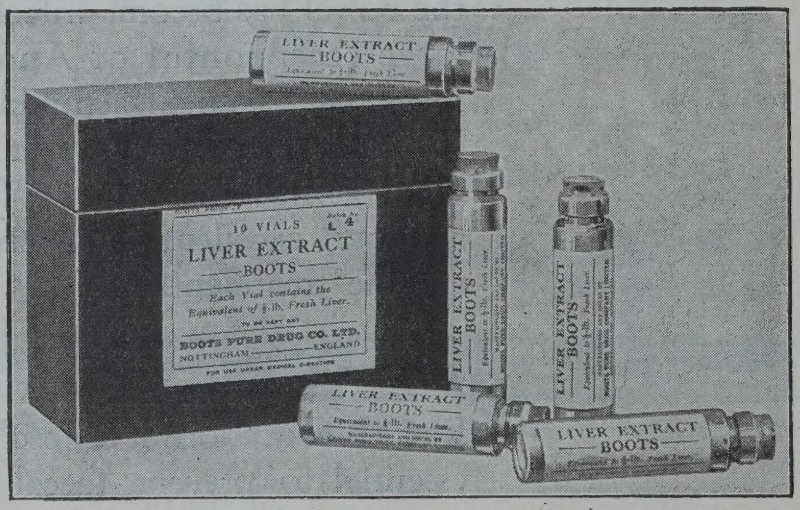
Liver Extract (BOOTS)



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PERNICIOUS ANÆMIA

Made by a process tested and found efficient by the Medical Research Council.

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Supplied in vials each equivalent to ½ lb. Fresh Liver.

PRICES :

Single Vials - - **4/6** Boxes of Ten - - **45/-**

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The most satisfactory form
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LIQUID PARAFFIN is repugnant to many fastidious patients because of its oily, greasy character. Occasionally it causes nausea and upsets the stomach. Frequently there is leakage which prohibits its continuous use. Even when taken readily and without these drawbacks, its failure to mingle with the food and with the fecal mass, lessens its full efficacy.

ANGIER'S EMULSION is made with a specially purified petroleum of just the right degree of viscosity. It is palatable and freely taken by those who object to the plain oil; it does not nauseate or upset the stomach; it is readily miscible with water or milk; it mixes with the feces, keeping them soft and plastic and ensuring maximum lubrication; the characteristic action of petroleum is obtained with greater uniformity. Moreover, *Angier's Emulsion aids Digestion and facilitates Assimilation.*

THIRTY-SIX YEARS OF CLINICAL EXPERIENCE have demonstrated the foregoing so conclusively that countless physicians now look upon Angier's Emulsion as the most satisfactory and effective form in which to employ pure petroleum.

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THE ORIGINAL AND STANDARD EMULSION OF PETROLEUM

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Calcium

(CROOKES)

A valuable addition to resources in the treatment of tuberculosis: calcium deficiency disorders and for the control of hæmorrhage.

Collosol Calcium with lecithin for nervous debility or neurasthenia associated with emotional disturbances, anæmias, rickets and marasmus.

CLINICAL REFERENCES.

"BRIT. MED. JNL." JAN. 14. 1922 · AUG. 12. 1922 · DEC. 29. 1923.
" " " MAY 23. 1925 : APRIL 3. 1926.
"TUBERCLE" MAY 1923.
"BRITISH DENTAL JOURNAL" FEBY. 1924.
"LANCET" NOV. 1922. "MEDICAL OFFICER" DEC. 4. 1926.

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"Ovaltine" relieves the monotony of the milk diet.

It increases the food value by fifty per cent.

It is an effective agent for adjusting the carbohydrate deficiency of milk.

The accessory food factors are present in "Ovaltine" in correct nutritive ratio and greatly enhance the nutritional value of milk.

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By the action of its malt constituent the dense heavy curd of cow's milk is converted into light, flaky, easily digested coagulum, and it has been conclusively shown by laboratory experiment that "Ovaltine" increases the digestibility of milk two fold.

"Ovaltine" is a highly concentrated extraction of malt, milk and eggs. One cupful when made as directed has a greater food value than 3 eggs or 12 cupfuls of beef extract.

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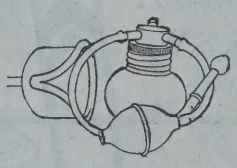
Oil of Eucalyptus, Oil of Cassia, Oil of Wintergreen, Menthol Crystals, with Neboline

will be found particularly effective when applied by means of the "Universal Vaporiser." This instrument reduces the compound to an almost invisible vapour without the use of steam or heat, and carries it to ALL parts of the respiratory tract including the middle ear and nasal sinuses. A less expensive model of this instrument is the "Aeriser."



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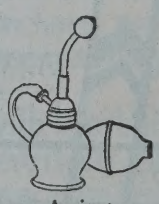

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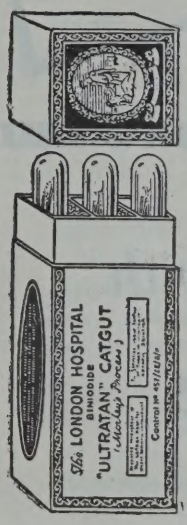
The LONDON HOSPITAL BINIODIDE CATGUT



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The London Hospital Catgut may be obtained from all the leading Surgical Equipment Houses.

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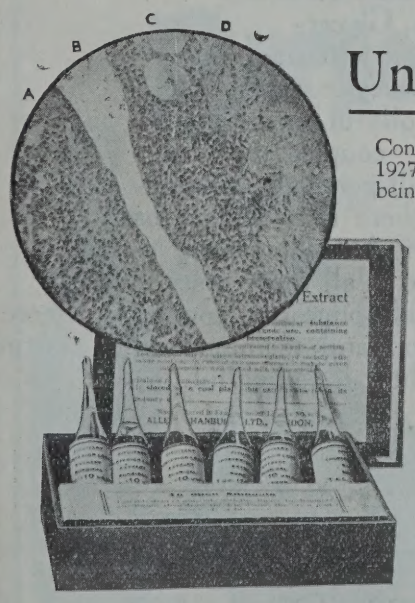
Unvarying Pituitary Extract



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Micro-photograph of section of Pituitary showing

(A) pars anterior **(C) pars intermedia (posterior lobe)**
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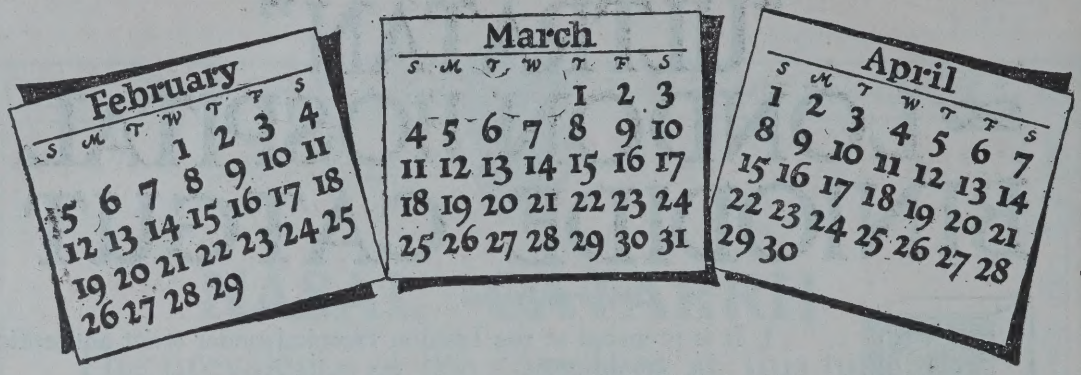

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during these **3** *months with*

Antiphlogistine

USED by the Medical Profession the world over as the dressing of proven efficacy in the management of pleurisy, bronchitis and allied chest conditions.

A moment's reflection on the composition of ANTIPHLOGISTINE—with its c. p. Glycerine blended in synergistic co-ordination with the mildly stimulating boric and salicylic acids, compounds of iodin, and the oils of menthol, gaultheria, and eucalyptus—coupled with a test on a selected case, will persuade the modern practitioner that there is a definite basis for the adoption of Antiphlogistine as the treatment of choice in all those cases involving inflammatory and congestive conditions where the application and maintenance of continuous moist heat is so helpful.

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Dear Sirs:

You may send me a complimentary copy of your booklet "The Pneumonic Lung" (sample included).

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Iodine	0.01 %
Boric Acid	0.1 %
Salicylic Acid	0.02 %
Essence of Menthol	0.002 %
Essence of Gaultheria	0.002 %
Essence of Eucalyptus	0.002 %
Mineral Clay	54.864 %

The Value of HORLICK's in cases of DEBILITY is inestimable

Debility, in most instances, can be eradicated by the provision of a balanced diet.

For the patient who is run down, a dilution of 1 part of Horlick's Malted Milk to 6 or 7 parts of water will quickly restore health and vigour. In more serious cases, where debility of long standing, such as that due to years of under-feeding, malnutrition, or unbalanced dietary, is encountered, the organs may be in such a weak state that a dilution as weak as 1 to 12 will be adequate — the strength being increased every few days, as the condition of the patient improves.

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Sample Bottle sent free in the United Kingdom, on receipt of professional card.

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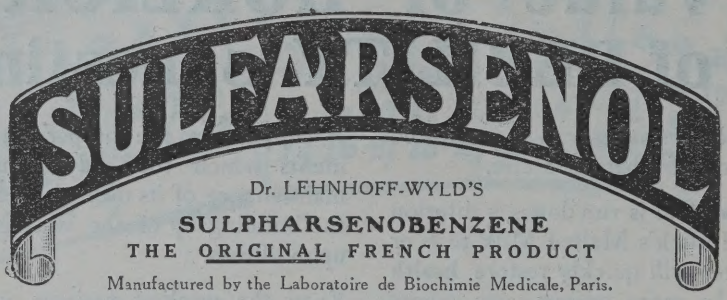
THE SUBCUTANEOUS ARSENOBENZENE



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Specific in—SYPHILIS in all its stages, YAWS, MALARIA, Gonorrheal Complications, Puerperal Infections.

EXTREME FACILITY of INJECTION either SUBCUTANEOUSLY or INTRAMUSCULARLY IN SOLUTION WITH FRESHLY DISTILLED WATER, INJECTIONS ARE PRACTICALLY PAINLESS.

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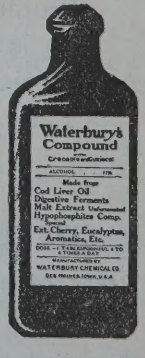

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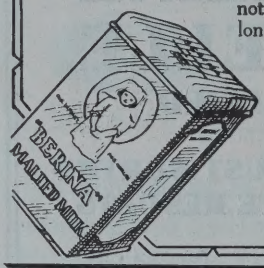

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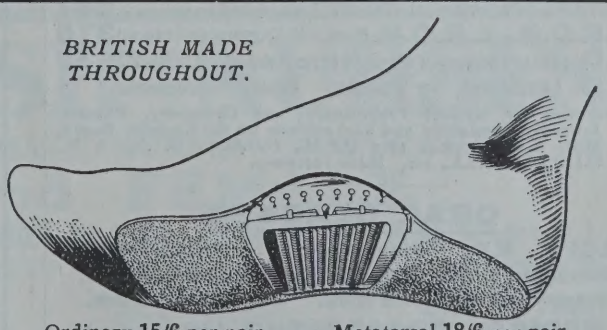

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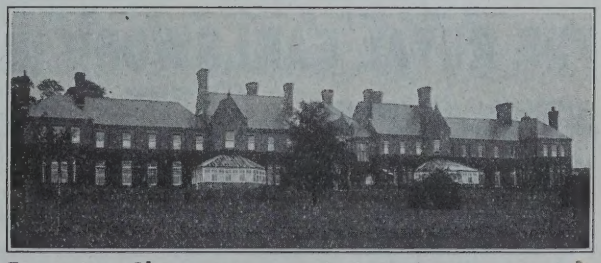

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Rendlesham Hall has 45 Bedrooms, and about 450 acres of Gardens and Park. It has also a private Nine-hole Golf Course, Tennis and Croquet Lawns, and Bowling Green.

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To those desiring to be nearer London,

THE MANSION, BECKENHAM PARK, BECKENHAM,

as carried on for the last twenty years, is available.

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Proprietors: THE NORWOOD SANATORIUM, LIMITED.

FARMWOOD, ASCOT.

This Sanatorium for the Treatment of TUBERCULOSIS is situated at SUNNINGHILL, amid the Pines. It stands 500 feet above sea level.

All forms of treatment are available. X-ray Installation. Full Nursing Staff. One hour by road or rail from London.

Resident Medical Superintendent—BERKELEY N. ASH, M.R.C.S., L.R.C.P., late Physician, Pendyffryn Hall, North Wales; 1st M.O., King Edward VII. Sanatorium, Midhurst.

For full particulars apply to the SECRETARY, FARMWOOD, ASCOT.

THE VICTORIA SANATORIUM

DAVOS, Grisons, Switzerland (Altitude 5,200 feet above sea-level)

For the Treatment of all Forms of TUBERCULOSIS

Under entirely new management. Caters especially for English-speaking clients

Situated in the centre of the English Quarter, Davos-Platz. This establishment is intended to receive English-speaking patients suffering from tuberculosis.

Terms from £5 a week

For particulars apply to the Medical Superintendent, BERNARD HUDSON, M.D. (Cantab.), M.R.C.P., Swiss Federal Diploma, The Victoria Sanatorium, Davos-Platz, or to the MANAGER.

PALACE SANATORIUM

Montana, Switzerland.

For the Treatment of Pulmonary and Surgical

TUBERCULOSIS

SUNNIEST HEALTH RESORT IN THE ALPS.
Altitude 5,000 feet.

MODERN EQUIPMENT

including roof Solarium, Throat Room, Clinical Laboratory, and recent X Ray Plant.
Day and Night Staff of English trained Nurses.

Medical Superintendent—
ANDREW MORLAND, M.B., B.S. Lond.

Inclusive Terms from £7 7s. 0d. per week.

Particulars from MEDICAL SUPERINTENDENT, or from THE SECRETARY, 5, Endsleigh Gardens, London, W.C. 1.

ALCOHOLISM, DRUG HABIT, and NEURASTHENIA.

BAY MOUNT, PAIGNTON.

Ladies and Gentlemen treated in small Private Home

EXCELLENT RESULTS FROM MODERN TREATMENT.
WINTER SUNSHINE. AMPLE AMUSEMENT
MODERATE INCLUSIVE TERMS.

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DR. FRANCIS HARE
Late of the Norwood Sanatorium, Beckenham,
IS NOW RESIDENT AT
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FUNCTIONAL NERVOUS DISORDERS ALCOHOLISM and DRUG ADDICTION

at CALDECOTE HALL, NUNEATON.
This Mansion has been opened upon the most modern and scientific line both physical and mental.
Resident Medical Superintendent—
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Full particulars upon request.
Prospectus from the SECRETARY, 40, Marsham Street, Westminster, S.W.1

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Physicians: G. C. R. Harbinson, M.B., B.Ch.
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NERVOUS & MENTAL AFFECTIONS.

Ladies only received.

The Grove, Old Catton, Norwich.—
A High-class Home for the Curative Treatment of Nervous Affections. Voluntary Boarders are also received without certificates.
For full particulars apply to the Misses MCLINTOCK, or to Dr. S. BARTON, 34, Surrey-street, Norwich, Visiting Physician.

BACKWARD AND DELICATE BOYS.

PRIVATE TUITION in very large Country Rectory. Many Medical and Educational References.
For Prospectus, write BM/BRFG, London, W. 1.

PRESTON DEANERY HALL, Northampton.

This Dietetic Institution, 3½ miles from Northampton, has been opened for the reception of PATIENTS REQUIRING DIAGNOSIS AND TREATMENT on rational lines. Own laboratory, X-ray, Electrical and Hydrotherapeutic treatments, Massage, Manipulation and remedial exercises.
Further particulars from the Secretary.
Fees from 12 guineas per week. *Telephone:* Hardingstone 6.

Sunlight Treatment.—Medical

Electricity. Massage. Certificated Operators, male and female. Two treatments for 21s., inclusive.—8, Francis-street, Victoria (next A. & N. Stores). Tel.: Victoria 5615.

Physician of wide experience in the

Treatment of Mental Disorder has a VACANCY in his Private Home for a Patient—voluntary or certified. Extensive lawns. Beautiful gardens. Occupations. In-door and out-door games. Motoring. Easy distance from town. Terms moderate.—Address, No. 862. THE LANCET Office, 423, Strand, W.C.2

Paddington Green Children's Hospital

(Incorporated), London, W.2.—HOUSE PHYSICIAN. HOUSE SURGEON.—These appointments will become vacant on May 1st, 1928. Gentlemen (unmarried) are invited to send in their applications, with copies of three testimonials, addressed to the undersigned not later than April 13th, 1928. Salary of each at the rate of £150 per annum, with board and residence. Candidates who have held a responsible Resident Hospital appointment are preferred. The appointments are for a period of six months. JAMES A. HAMLIN, Secretary.

The Belgrave Hospital for Children

(Incorporated), 1, Clapham-road, S.W. 9.

The Committee of Management invite applications for the posts of

HOUSE SURGEON and
ASSISTANT HOUSE PHYSICIAN,

which will become vacant on April 30th. Applicants (men) must be fully qualified and registered. The appointments are for six months, with board, residence, and washing provided. Salary at the rate of £100 per annum in each case.

Applications, with copies of testimonials, stating age, to be forwarded on or before Wednesday April 11th.

By order.
THOMAS CLAPHAM, Secretary.

Ministry of Health.

APPOINTMENT OF DEPUTY REGIONAL MEDICAL OFFICERS.

The Minister of Health invites applications from registered Medical Practitioners for appointment as Deputy Regional Medical Officer on the Staff of the Ministry in various parts of England, for the discharge of combined Clinical and Administrative duties in connection with the National Health Insurance Medical Service.

The rate of remuneration will be £800 per annum, rising by annual increments of £30 to a maximum of £1100. No cost of living bonus will be payable in addition thereto.

Successful candidates under the age of fifty years will be appointed to this scale and will be established Civil Servants, with the usual pension rights. Those who are considered to possess exceptional or special qualifications may be allowed to enter the above scale at a commencing salary of £850 per annum.

Successful candidates of the age of fifty years and upwards (at the time of appointment) will be appointed to the above scale and will receive unestablished, non-pensionable appointments. In special circumstances, where a candidate in this category has special qualifications and experience, the commencing salary might be advanced to a point in the scale not exceeding £1000 per annum inclusive.

Above the grade of Deputy Regional Medical Officer there are at present thirty posts of Regional Medical Officers rising to a maximum of £1400 a year inclusive, and four posts of Divisional Medical Officers rising to a maximum of £1600 a year inclusive. The above numbers are, however, subject to revision from time to time as the exigencies of the Service may determine. When vacancies are to be filled among the Regional Medical Officers, preference will be given to those who have given satisfaction as Deputy Regional Medical Officers.

Candidates must be Medical Men of not less than ten years' standing and not exceeding the age of fifty-five years, with a wide experience of General Practice, especially amongst the industrial population. Preference will be given to candidates who served in His Majesty's Forces during the War.

Deputy Regional Medical Officers are required to devote their whole time to the public service and to perform such duties as may be assigned to them by the Minister from time to time. These include acting as deputy to the Regional Medical Officer in the work carried out by the latter :—

(*a*) as Medical Referee in cases of insured persons referred for a second medical opinion on questions of incapacity for work, or of restoration of working capacity ;
(*b*) in assisting in the administration of the Insurance Medical Service.

Deputy Regional Medical Officers must be prepared to reside in the area from time to time assigned to them.

Canvassing Members of Parliament or officers of the Ministry will render a candidate liable to disqualification.

Forms of application, with further particulars of the appointment, may be obtained from the

DIRECTOR OF ESTABLISHMENTS,
Ministry of Health,
Whitehall, S.W.

No application can be considered unless received *on the prescribed form* not later than the 16th April, 1928.

The Queen's Hospital for Children,

Hackney-road, London, E.2.

The Committee invite applications for the post of PHYSICIAN-IN-CHARGE of the Skin Department. Candidates, who must be Fellows or Members of the Royal College of Physicians of London, should send in their applications, with copies of testimonials on or before 10th April.

Information re duties and times of attendance on application.
T. GLENTON-KERR, Secretary.
12th March, 1928. Telephone : Bishopsgate 2534 & 6305.

The Prince of Wales's General

HOSPITAL, Tottenham, N.15.

Applications are invited for the following posts, vacant on the 15th April next :—

HOUSE SURGEON	£120 per annum.
SPECIAL HOUSE SURGEON	£120 per annum.
HOUSE PHYSICIAN	£120 per annum.
JUNIOR HOUSE SURGEON	£90 per annum.
JUNIOR HOUSE PHYSICIAN	£90 per annum.

with residence, board, and laundry.

The appointments are held for six months, but the holders are eligible for re-appointment for a further term.

Candidates (male) must be fully qualified and registered, and applications (on prescribed form), together with copies of three recent testimonials, should be sent to me on or before the first post on Monday, 2nd April.

March 10th, 1928. FREDK. W. DREWETT, Director.

The Hospital for Sick Children,

Great Ormond-street, London, W.C.1.

A HOUSE SURGEON is required on 12th April, 1928, and a HOUSE PHYSICIAN and ASSISTANT CASUALTY OFFICER is required on 14th April, 1928.

Gentlemen are invited to send in their applications, addressed to the Secretary, before 12 o'clock, on Monday, 2nd April, 1928, with copies of not more than three testimonials given specially for the purpose, and also evidence of their having held a responsible hospital appointment.

The appointments are made for six months. Salary £50, laundry allowance £5, board and residence in the Hospital.

Candidates must be unmarried, and possess a legal qualification to practice.

All candidates must be in attendance to appear before the Joint Committee, if required, at their meeting on Wednesday, 4th April, 1928, at 5 P.M. precisely.

Forms of application and copies of the rules may be obtained from the Secretary.

By order of the Board of Management.
March, 1928. JAMES MCKAY, Secretary.

Hôpital Francais,

172, Shaftesbury Avenue, W.C.2.

The Committee hereby give notice that there is a vacancy for a PHYSICIAN to in-patients. Candidates must be able to converse fluently in French, be inscribed on the Medical Register and be graduates in medicine of a University. Present Physician to out-patients is applying for the post.

Applications should be sent with copies of three recent testimonials before the 12th April to the Secretary of the Hospital.

The Committee hereby give notice that there is a vacancy for a PHYSICIAN to out-patients. Candidates must be able to converse fluently in French, be inscribed on the Medical Register and be graduates in medicine of a University.

Applications should be sent before the 12th April to the Secretary of the Hospital together with three recent testimonials.

A JUNIOR RESIDENT MEDICAL OFFICER (Male) required. Registered, unmarried, speaking French fluently. Salary £100 per annum, with full board and laundry.

Candidates should send in their applications with three recent testimonials before the 12th April to

J. KNECHT, Secretary.

Princess Louise Kensington Hospital

FOR CHILDREN, North Kensington, W. 10.

The Board of Management invite applications from registered Medical Practitioners, Male or Female, for the post of (1) HOUSE PHYSICIAN and (2) HOUSE SURGEON. One of the officers selected will be appointed Resident Medical Officer and will be regarded as the Senior of the two Residents.

The officers are required from about the end of April. The Senior will be appointed for a period of nine months with a salary at the rate of £100 per annum, and the other officer for a period of six months with a salary at the rate of £75 per annum ; in addition, the officers will be provided with board, residence, and laundry.

The Hospital contains some 30–40 Beds for children, with a large Out-patients' Department, in which women patients receive medical treatment on certain days.

Applications, together with copies of not more than three recent testimonials, must be submitted on a form to be obtained from the Hospital's financial office ; address, Secretary, Princess Louise Kensington Hospital for Children, Town Hall, Kensington, W. 8. Applications must reach this office not later than Monday, April 16th.

London Fever Hospital, Islington,

N.1.—A vacancy has occurred in the post of HONORARY SURGEON to the Hospital.

Gentlemen holding the Fellowship of the Royal College of Surgeons are invited to send applications for the appointment to the Secretary at the Hospital on or before the 9th April.

By order of the Committee.

HERBERT J. SAY, Secretary.

The Hospital for Women, Soho-

square, W.1.—A vacancy having occurred in the office of ASSISTANT ANÆSTHETIST to the Hospital, applications are invited for the post. Candidates must be registered Medical Practitioners and must submit their applications in writing, with testimonials, to the undersigned, not later than Saturday, 14th April, 1928.

The appointment is Honorary, but an allowance of ten guineas a year is made for travelling expenses.

ALFRED HAYWARD, Secretary.

Mildmay Mission Hospital, Austin-

street, Bethnal Green, E. 2.—Applications are invited for the post of SENIOR RESIDENT MEDICAL OFFICER (Male), which becomes vacant on May 1st, 1928. Salary £140 per annum, with board, residence, and laundry. The appointment is for six months.

Candidates must be duly registered under the Medical Acts, and the Mildmay Council is anxious that they should be fully in sympathy with the religious work of the Hospital.

Applications, with copies of recent testimonials, should be sent to the Medical Superintendent at once.

Mildmay Mission Hospital, Austin-

street, Bethnal Green, E. 2.—Applications are invited for the post of ASSISTANT CASUALTY OFFICER (Female), which becomes vacant on May 1st, 1928. The appointment is part-time and non-resident, and for six months. Salary £100 per annum.

Candidates must be duly registered under the Medical Acts, and the Mildmay Council is anxious that they should be fully in sympathy with the religious work of the Hospital.

Applications, with copies of recent testimonials, should be sent to the Medical Superintendent at once.

The Miller General Hospital for South

EAST LONDON, Greenwich-road, S.E. 10.

CASUALTY OFFICER (Male and unmarried) required. There are three other residents. Salary £150 per annum, with board, residence, and laundry. Duties to commence as soon after April 1st as possible. Applications, stating age, nationality, qualifications, and experience, accompanied by copies of not more than three recent testimonials, to be sent to the Secretary as soon as possible.

March 26th, 1928.

Laboratories of Pathology and Public

HEALTH.

ASSISTANT PATHOLOGIST.

A vacancy has occurred on the Staff for a qualified Medical man, preferably the holder of an English or Scottish University degree, not over thirty-three years of age, who has been engaged in the practice of Clinical Pathology for at least one year.

Commencing salary £500 per annum, rising £25 annually to £650 per annum.

Applications, accompanied by three testimonials, should be submitted not later than April 20th, addressed to the Secretary, Laboratories of Pathology and Public Health, 6, Harley-street, London, W. 1.

Hospital for Consumption & Diseases

OF THE CHEST, Brompton, S.W.3.—The Committee of Management invite applications for the post of HOUSE PHYSICIAN (for which there are Four Vacancies). The duties include work in the out-patient Department as well as in the Wards, and one of the selected candidates will also be appointed Assistant to the Tuberculosis Officer for the local Tuberculosis Dispensary at the Hospital. Applications, with copies of testimonials, must be sent in not later than Saturday, 14th April, 1928, addressed to the Secretary. The appointment is for six months, commencing on 1st May, with an honorarium of £50.

FREDERICK WOOD, Secretary.

Brompton, March, 1928.

The Manor House Hospital, Golders

Green, London, N.W.11. (112 Beds.)

Applications are invited for the post of HOUSE SURGEON. Salary at the rate of £200 per annum, with board, residence, and laundry.

Appointment for six months; renewable if mutually agreed. Preference given to one having held six months previous appointment as a House Surgeon. Candidates (Male and unmarried) must be fully qualified and registered. Applications, stating age, nationality, and qualifications, together with copies of three recent testimonials, should reach the undersigned not later than the first post on Saturday, the 7th April, 1928.

JAMES W. LINKHORN, Secretary.

Seamen's Hospital Society. — The

Committee of Management invite applications for the appointment of ANÆSTHETIST at the Dreadnought Hospital, Greenwich. Attendance on Tuesday afternoons. An honorarium of 50 guineas per annum is attached to the post.

The elected candidate will be appointed for twelve months, but will be eligible for re-election.

Applications, with copies of three testimonials, to be sent in on or before April 30th to the undersigned, from whom further particulars can be obtained. R. E. V. BAX, Secretary.

Greenwich, S.E. 10, March 26th, 1928.

Seamen's Hospital Society. — The

Committee of Management invite applications for the appointment of SURGEON with Charge of Out-patients at the Dreadnought Hospital, Greenwich. The elected candidate will have beds allotted to him and will be appointed for twelve months, but will be eligible for re-election.

Candidates must be Fellows of the Royal College of Surgeons of England, or Masters in Surgery of an University in the United Kingdom.

Applications to be sent in on or before Monday, April 30th to the undersigned, from whom further particulars can be obtained.

By order,

R. E. V. BAX, Secretary.

Greenwich, 26th March, 1928.

MEDICAL REGISTRAR.

Royal National Orthopædic Hospital.

The Committee propose to appoint a Medical Registrar whose duties will include a daily visit to the Hospital to see medical cases in the wards. Honorarium at the rate of £150 a year. Applications from Fellows or Members of the Royal College of Physicians and accompanied by three recent testimonials, should reach the Secretary, 234, Gt. Portland-street, W.1, on or before April 12th.

The Hospital for Epilepsy and

PARALYSIS, Maida Vale, W.9.

A RESIDENT MEDICAL OFFICER required 1st May.

HOUSE PHYSICIAN required 1st May.

Applications are invited for these posts. The salaries are at the rate of £150 and £100 per annum, respectively, and the appointments are for six months. Candidates for the post of Resident Medical Officer should state if they are willing to take that of House Physician, and applications, accompanied by copies of three recent testimonials, should reach me by 20th April.

The accommodation at the Hospital does not permit of Women Graduates holding these appointments.

H. W. BURLEIGH,
Secretary and General Superintendent.

Holborn Union, London.

HOLBORN AND FINSBURY HOSPITAL, Archway-road, N.19.

The Guardians of the Holborn Union invite applications for the post of SECOND ASSISTANT MEDICAL OFFICER at their Holborn and Finsbury Hospital, Archway-road, Upper Holloway, N. 19. Salary £300 per annum, with board, furnished apartments, &c.

The gentleman appointed will be required to devote the whole of his time to the duties of the office and to act under the direction of the Medical Superintendent.

The appointment will be subject to the approval of the Ministry of Health, and to the provisions of the Poor Law Officers' Superannuation Act, 1896.

Applications, by letter only, stating age, qualifications, experience, &c., together with copies of not more than three recent testimonials, must reach me on or before the 10th April, 1928.

By order.

Chas J. CROSS, Clerk to the Guardians.

Metropolitan Hospital,

Kingsland-road, E.8.

There are vacancies for the following:—

(*a*) A SENIOR HOUSE PHYSICIAN.
(*b*) A SENIOR HOUSE SURGEON.
(*c*) A JUNIOR HOUSE PHYSICIAN.
(*d*) A JUNIOR HOUSE SURGEON.
(*e*) TWO CASUALTY OFFICERS.

Males. Salary £100 per annum.

Appointments in the first place will be for a period of six months, dating from May 1st.

Candidates must possess a registered Medical and Surgical qualification of the United Kingdom.

Applications, with copies of three recent testimonials and a certificate of ability to administer anæsthetics, should be sent to the undermentioned not later than the first post on Thursday, the 19th April.

Two members of the Resident Staff are candidates for the two senior appointments.

HERBERT F. RUTHERFORD
Secretary and House Governor.

South-Eastern Hospital for Children,

Sydenham, S.E.26.—Applications are invited for the position of ASSISTANT RESIDENT MEDICAL OFFICER (Lady). The appointment will be for six months from May 1st. Honorarium £75 per annum, with board, residence, and laundry. Ample time for reading. Applications, stating age and qualifications, with copies of testimonials, should be sent to WALTER MASON, Hon. Secretary, "Woodfield," Dacres-road, Forest Hill, S.E.23. to be received not later than Saturday, April 14th.

St. Mary's Hospital for Women and CHILDREN, Plaistow, E.13.

Applications are invited for the post of ASSISTANT RESIDENT MEDICAL OFFICER (vacant May 1st), male or female. The appointment is for six months. Board, residence, and laundry are provided. Salary at the rate of £130 per annum. The duties are mainly medical. Personal canvassing not desired. Applications, with copies of three recent testimonials, to be sent to the undersigned not later than April 10th.

A. ERNEST WILKES, Secretary.

Hampstead General and North-west LONDON HOSPITAL, Haverstock Hill, N.W.3.

APPOINTMENT OF CASUALTY MEDICAL OFFICER.

Applications are invited from registered Medical Practitioners for the position of Casualty Medical Officer at the Out-patient Department of the Hospital, Bayham-street, Camden Town, which will become vacant on May 1st next.

The salary will be at the rate of £100 per annum, together with board, residence, &c., and the term will be for six months.

Applications, stating age, qualifications, experience, together with copies of not more than three testimonials, should reach the Secretary not later than April 14th next.

Hampstead General and North-west LONDON HOSPITAL, Haverstock Hill, N.W.3.

APPOINTMENTS OF HOUSE SURGEONS AND HOUSE PHYSICIAN.

Applications are invited from registered Medical Practitioners for the following positions :—

HOUSE SURGEON to No. 1 Unit, vacant May 1st next.
HOUSE SURGEON to No. 2 Unit, vacant June 1st next.
HOUSE PHYSICIAN, vacant June 1st next.

The salary for each appointment will be at the rate of £100 per annum, together with board, residence, &c., and the term will be for six months.

Applications, stating age, qualifications, experience, together with copies of not more than three testimonials, should reach the Secretary not later than April 14th next.

Royal Victoria Hospital, Dover.

Wanted, HOUSE SURGEON (unmarried), doubly qualified and registered. Salary £180 a year, and board, lodging, and laundry. 45 beds.

Applications to be received on or before the 13th April by the Hon. Secretary, 19, Castle-street, Dover, on a form to be obtained from him.

Royal Halifax Infirmary.

Wanted, a THIRD HOUSE SURGEON (Male, unmarried) Candidates must be duly qualified and registered. (The Resident Medical Staff consists of Resident Surgical Officer and three House Surgeons.)

The appointment is for six months ending 31st October, 1928. Probable promotion if satisfactory. Salary £100 per annum, with residence, board, and laundry. Particulars of duties, &c., may be obtained from the undersigned, to whom applications, with copies of testimonials, should be sent not later than 11th April, 1928.

A. MIDGLEY, Secretary.

27th March, 1928.

Derbyshire Royal Infirmary, Derby.

(General Hospital, 330 beds.)

Applications are invited for the following posts :—
HOUSE SURGEON (Male).
ASSISTANT HOUSE SURGEON AND CASUALTY OFFICER (Male).

Candidates must be qualified and registered under the Medical Acts.

The appointment of the House Surgeon is tenable for twelve months, and the Assistant House Surgeon will be appointed for six months. Salaries will be £150 per annum, with apartments, board, &c.

Applications, with copies of not more than three testimonials, to be sent to the undersigned not later than April 13th. Duties will commence on May 1st.

WALTER BANKS,
March 23rd, 1928. Superintendent and Secretary.

The Liverpool Eye and Ear Infirmary,

Myrtle-street.—Applications are invited for the post of a THIRD HONORARY ANÆSTHETIST to the above Hospital. Applications to be forwarded to Chas. W. Wright, Esq., Chairman, 9, Harrington-street, Liverpool, not later than April 20th prox.

Walsall Union.

MEDICAL OFFICER.

Applications are invited from fully qualified registered Medical Practitioners for the appointment of a whole-time Resident Medical Officer at the Poor Law Institution, Walsall.

The total number of beds in the Institution is 629, of which 193 are in the Hospital.

Applicants must not be more than 40 years of age. The remuneration will be at the rate of £600 per annum, plus fees for Vaccination, and the certification of lunatics. A separate residence within the confines of the Guardians, estate will be provided, rent, rates, and taxes free, together with fuel, lighting and heating.

The appointment is subject to the provisions of the Poor Law Officers' Superannuation Act, 1896, for which purpose the valuation of the emoluments will be fixed at £150 per annum.

The person appointed will be required to commence duty on or about the 1st July, 1928.

Applications, stating whether married or single, age, experience and qualifications, accompanied by copies of recent testimonials, should be sent to me not later than 21st April, 1928.

Canvassing the Guardians directly or indirectly will be a disqualification.

C. S. FOTHERGILL, Clerk to the Guardians.
Union Offices, 29, Leicester-street, Walsall, 24th March, 1928.

County Borough of Walsall.

APPOINTMENT OF CLINICAL TUBERCULOSIS OFFICER, ASSISTANT MEDICAL OFFICER OF HEALTH, AND ASSISTANT SCHOOL MEDICAL OFFICER. (Male).

Applications are invited from medical men not over the age of thirty-five for the appointment of a Clinical Tuberculosis Officer and Assistant Medical Officer of Health, &c.

Salary £750 per annum.

Applicants must be duly registered medical practitioners holding a Diploma of Public Health, and should have had at least six months' experience since graduation as House Physician or House Surgeon in a General Hospital together with special experience of Tuberculosis in Dispensary and Sanatorium practice.

A knowledge of Bacteriology is essential.

Applications on forms to be obtained from the undersigned, stating age, qualifications, training and experience, together with copies of three recent testimonials and endorsed on the envelope "Clinical Tuberculosis Officer" should be sent to the Town Clerk not later than Wednesday, the 11th April, 1928.

The person appointed will be required to devote the whole of his time to the duties, to reside in Walsall, and to act under the administrative control of the Medical Officer of Health.

The appointment will be subject to the provisions of the Local Government and Other Officers' Superannuation Act, 1922.

Canvassing directly or indirectly will be considered a disqualification.

HERBERT LEE, Town Clerk.
Council House, Walsall, 22nd March, 1928.

Rhondda Urban District Council

ASSISTANT MEDICAL OFFICER.

The above Council invite applications from registered medical practitioners to act as whole-time Assistant Medical Officer of Health and Assistant School Medical Officer under the direction, supervision, and control of the Council's Medical Officer of Health, at a salary of £600 per annum, together with travelling expenses necessarily incurred in the performance of the duties.

Candidates must have had not less than three years' professional experience subsequent to registration and the possession of a Diploma in Public Health is desirable.

The duties will pertain to both the public health and school medical services, but experience in the prescription of glasses for errors of refraction, of the examination and certification of mentally defective children, the administration of anæsthetics in minor (including dental) operations, and orthopædic work will be considered to be of special importance.

The appointment will be subject to two calendar months' notice on either side, and to the approval of the Board of Education. The officer appointed will be required to reside within the Rhondda Urban District and will not be allowed to engage in private practice.

Canvassing by or on behalf of candidates will be considered to be a disqualification.

Applications are to be made on forms obtainable from the Medical Officer of Health, Tydfil House, Llewellyn-street, Pentre, Rhondda, by whom they must be received, endorsed "Assistant Medical Officer," and accompanied by copies of three recent testimonials, not later than Wednesday, April 11th, 1928.

D. J. JONES, Clerk of the Council.
The Council Offices, Pentre, Rhondda, 21st March, 1928.

Carlisle Non-Provident Dispensary.

RESIDENT MEDICAL OFFICER required. Salary £250 per annum with apartments (not board). Applications with not more than three testimonials, stating age, experience, and qualifications, to be sent to the Honorary Secretary, Mr. G. L. S. Lightfoot, 21, Castle-street, Carlisle, on or before the 10th April.

Leigh Infirmary, Lancashire.—Wanted

a RESIDENT HOUSE SURGEON, Male, Single, for Hospital of 70 beds. Salary £150, with rooms, fire, attendance, and board. The position is vacant at the end of April.

The appointment is for six months with eligibility for re-election. Must be good anæsthetist.

Applications to be addressed to J. A. SMITH, Esq., Secretary, 3, Silk-street, Leigh, Lancs.

Burton-on-Trent Infirmary.

HOUSE SURGEON.

The Committee require the services of a duly qualified Junior Resident House Surgeon (Male). Salary £150 with board and furnished quarters. Duties to commence May 1st, 1928.

Applications, stating age and experience, to be sent to the undersigned not later than April 5th.

E. W. THORNLEY, Secretary.

The Infirmary, Burton-on-Trent.

The Royal Infirmary, Doncaster.

(121 Beds.)—THIRD HOUSE SURGEON (Male) required immediately. Duties include Ophthalmic, Medical, and Casualty work. Opportunity for gaining excellent experience. Appointment is for six months, and successful candidate is eligible for reappointment and probable promotion.

Salary £150 per annum, with board, residence, and laundry.

Applications, with full particulars, should be addressed to the undersigned by Wednesday, April 4th.

J. LAWRENCE MEARS, Secretary-Superintendent.

26th March, 1928.

Walsall General Hospital. — The

Committee invite applications for the post of HOUSE SURGEON (salary £125 per annum).

Candidates, who must be registered under the Medical Acts, must have had experience in the administration of Anæsthetics and produce three recent testimonials. The appointment will be for six months.

The Hospital is equipped in all Special Departments and the average number of beds occupied during 1927 was 95.5.

Applications must be received by the undersigned not later than the first post Tuesday, 10th April.

WALTER FRANCOMBE, Secretary.

County Mental Hospital, Whittingham,

Preston, Lancs.—SIXTH ASSISTANT MEDICAL OFFICER wanted. Commencing salary £350 per annum, rising to £450 by yearly increments of £25, with board, apartments, attendance, and laundry, valued at £150 per annum. Further increases according to promotion. One interested in Laboratory and Research work preferred. Candidates must be unmarried, and registered under the Medical Act. The appointment is subject to 3 per cent. deduction on salary and emoluments under the Asylum Officers' Superannuation Act, 1909. Apply, stating age and full particulars, to the Medical Superintendent.

Addenbrooke's Hospital, Cambridge.

Applications are invited for the post of RESIDENT ANÆSTHETIST (Male). The appointment will be for six months from May 1st, 1928, and may be renewed for a further period of six months, but is terminable at any time by one month's written notice on either side. Salary at the rate of £180 per annum, with board, residence, and laundry. Candidates, who must be unmarried, and duly registered, are requested to forward their applications, stating age, qualifications, &c., together with copies of nor more than four recent testimonials, to the undersigned on or before Wednesday, April 11th, 1928.

W. H. HEAD, Secretary-Superintendent.

Royal Devon and Exeter Hospital,

Exeter. (225 Beds).

HOUSE PHYSICIAN (Male).

Applications are invited for the post of House Physician at this Hospital vacant on the 21st April next. The appointment is for six months but candidates are eligible for re-election.

Salary at the rate of £130 per annum with board, apartments, and washing.

Applications, giving particulars as to age and qualifications, together with certificate of registration, and copies of three recent testimonials, should be sent to the undersigned on or before Thursday, 5th April, 1928.

By order of the Committee.

Dated 23rd March, 1928. S. S. COLE, Secretary.

Weston-super-Mare Hospital. —

RESIDENT MEDICAL OFFICER (Male), unmarried. Salary £130. Duties to commence immediately.

Qualified Medical Man with some

experience of Biological Standardisation is required for this work at the Research Laboratories of EVANS SONS LESCHER & WEBB, Ltd.

Applications should be made, giving full particulars, to the Medical Director, Crofton Lodge, Runcorn, Ches.

Norfolk and Norwich Hospital,

Norwich.—CASUALTY OFFICER and HOUSE SURGEON (with charge of 25 beds) required. Salary £120, with board, residence, and laundry. Candidates (Male), who must possess registered qualifications, should forward applications, stating age, nationality, &c., together with copies of testimonials, to the undersigned not later than the 10th April.

FRANK INCH, House Governor and Secretary.

30th March, 1928.

Bromley Union, Kent.

RESIDENT MEDICAL OFFICER.

The Guardians of the Bromley Union invite applications for the position of Resident Medical Officer at their Institution, Farnborough, Kent.

Candidates must be fully qualified Registered Medical Practitioners with a knowledge of up-to-date modern surgery, and aged between thirty and forty years.

Salary, £800 per annum. The selected candidate will be required to reside in a house provided by the Guardians, free of rent, rates, and taxes.

The appointment will be subject to the approval of the Ministry of Health, and to the provisions of the Poor Law Officers' Superannuation Act, 1896.

Canvassing the Guardians, directly or indirectly, is strictly prohibited, and will disqualify a candidate.

The person appointed will be required to enter into a Contract for the due performance of the duties of his office, and to the enforcement of the conditions appertaining thereto.

Forms of application, together with list of duties, can be obtained by sending a stamped addressed foolscap envelope to the undersigned, and completed forms must be returned not later than twelve noon on Monday, the 16th April, 1928.

By order.

P. J. D. WILEY, Clerk to the Guardians

Union Offices, Bromley, Kent. 26th March, 1928.

UNIVERSITY COLLEGE, GALWAY

THE PROFESSORSHIP OF

Therapeutics, Pharmacology, and Materia Medica.

The Governing Body invites applications for the foregoing Professorship, which is a part-time Professorship. Salary £308 to £320 a year. The last day for receiving applications is the 15th June, 1928. Further particulars can be obtained from the Secretary.

K.A.A,

UNIVERSITY COLLEGE, GALWAY

The Professorship of Midwifery and Gynæcology

The Governing Body invites applications for the foregoing Professorship, which is a part-time Professorship. Salary £308 to £320 a year. The last day for receiving applications is the 15th June, 1928. Further particulars can be obtained from the Secretary.

K.A.A.

Carnarvonshire and Anglesey

INFIRMARY, Bangor. (A General Hospital.).—HOUSE SURGEON (Male) wanted. Must be fully qualified. Salary £200 per annum, with residence, board, and laundry.

Applications, with two recent testimonials, to reach the Secretary not later than April 9th.

Indian Medical Service.

The Secretary of State for India proposes shortly to make some further appointments to permanent commissions in His Majesty's Indian Medical Service. The Selection Committee will meet at the India Office early in April to consider applications. Well-qualified medical men (British subjects) of European descent, under thirty-two years of age, who desire to be considered should apply to the Under Secretary of State for India, Military Department, India Office, London, S.W.1, for forms of application, memorandum of terms of appointment, and full particulars of gratuity terms. Envelopes should be marked on top left-hand corner "Medical Recruitment."

The selected candidates will be required to attend a course of instruction in this country, commencing on the 1st May, 1928, prior to sailing for India about November next.

Lucknow University.

Applications are invited for the post of PROFESSOR OF ANATOMY in the University on a salary of Rs.1450/- per mensem in the grade of Rs.1450–50–1650 with effect from 1st November, 1928. No private practice allowed. The present officiating incumbent will be an applicant for the post. Selected candidate will be on probation for one year, and on confirmation, will be entitled to the benefits of the University Provident Fund (8 per cent. paid by the subscriber and 8 per cent. contributed by the University). Residential bungalow provided on fixed rental. Applications, stating age, qualifications, experience, giving references and copies of three testimonials, should reach the undersigned on or before the 23rd April, 1928.

R. R. KHANNA, Registrar.

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2. KENT.—Favourite Coast Town.—Old-estab., very sound, mixed-class PRACTICE, averaging for the past three years over £2500 p.a. Fees from 4s. to 21s. Very little Midwifery, from 5 gns. Convenient house with good professional accommodation, 2 reception, 3 bedrooms, &c. Electric light. Garage. Price for lease (with 20 years to run at a ground rent of £37), £200. Premium 1½ years' purchase.
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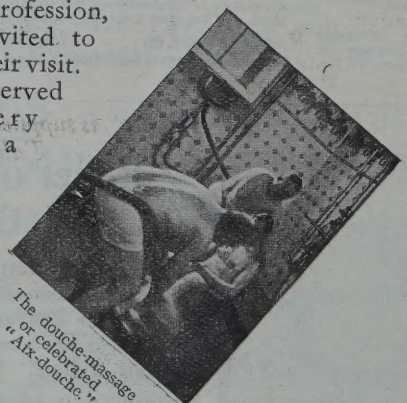

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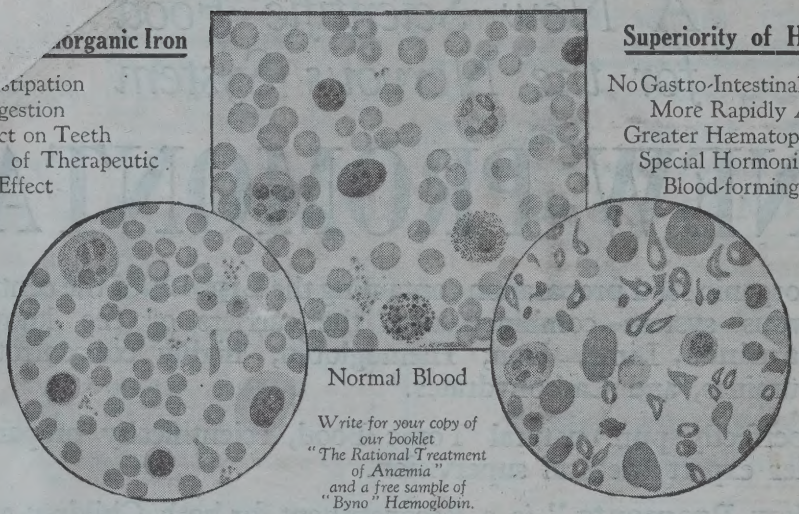

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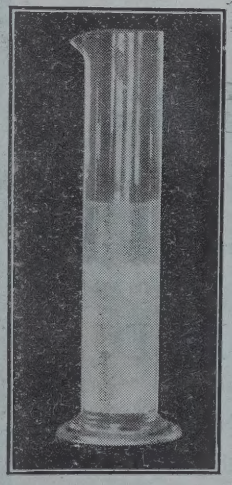

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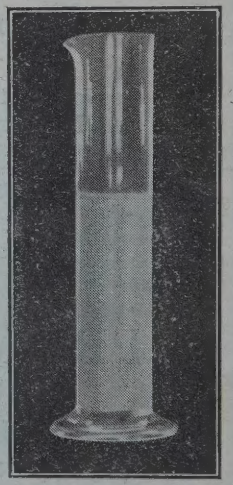

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